1285458

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

February 15, 2005

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE.

APPLICATION NUMBER: *60/504,307*
FILING DATE: *September 19, 2003*
RELATED PCT APPLICATION NUMBER: *PCT/US04/30699*

Certified by

Jon W. Dudas

Under Secretary of Commerce
for Intellectual Property
and Director of the United States
Patent and Trademark Office

INVERSION ON CHROMOSOME 8p23 IS RISK FACTOR FOR ANXIETY DISORDERS, DEPRESSION AND BIPOLAR DISORDERS

ABSTRACT OF THE DISCLOSURE

An association between panic disorder (PD) and genetic markers in the 8p23 genomic region is described. Markers are also provided to diagnose or detect a susceptibility to disorders comorbid with PD and independently of comorbidity with PD. Methods and surrogate markers for detecting the orientation of the Inv8p23 inversion fragment, thereby diagnosing PD and/or one or more comorbid disorders or a susceptibility to PD and/or one or more comorbid disorders, are also disclosed.

CLAIMS

What is claimed is:

1. A method of diagnosing an anxiety disorder in an individual comprising detecting one or more genetic markers in the Inv8p23 genomic region.

2. The method of Claim 1, wherein the anxiety disorder is PD.

3. The method of Claim 1, wherein the anxiety disorder is a comorbid PD disorder.

4. The method of Claim 3, wherein the comorbid disorder is selected from the group consisting of: depression, bipolar disorder, obsessive-compulsive disorder, histrionic personality disorder, family denial and dysfunction, hypercholesterolemia and substance abuse.

5. The method of Claim 4, wherein the comorbid disorder is selected from the group consisting of: depression, bipolar disorder and hypercholesterolemia.

6. The method of Claim 1, wherein the anxiety disorder is bipolar disorder.

7. The method of Claim 1, wherein the genetic marker is the inverted allele of Inv8p23.

8. The method of Claim 7, wherein the inversion fragment is detected by detecting one or more genetic markers.

9. The method of Claim 8, wherein the marker is selected from the group consisting of: SG08S5, SG08S95, DG8S269, DG8S163, DG8S197, AF131215-

2, DG8S127, SG08S120, DG8S179, SG08S27, DG8S261, SG08S71, SG08S32, SG08S517, SG08S70, SG08S102, SG08S73, SG08S76, SG08S26, DG8S242, SG08S15, DG8S257, SG08S138, DG8S161, SG08S520, DG00AAHBG, SG08S508, DG8S156, D8S1695 and DG8S170.

10. The method of Claim 7, wherein the orientation of the inversion fragment is detected by detecting a haplotype comprising one or more genetic markers.

11. The method of Claim 10, wherein one or more genetic markers of the haplotype is selected from the group consisting of: SG08S5, SG08S95, DG8S269, DG8S163, DG8S197, AF131215-2, DG8S127, SG08S120, DG8S179, SG08S27, DG8S261, SG08S71, SG08S32, SG08S517, SG08S70, SG08S102, SG08S73, SG08S76, SG08S26, DG8S242, SG08S15, DG8S257, SG08S138, DG8S161, SG08S520, DG00AAHBG, SG08S508, DG8S156, D8S1695 and DG8S170.

12. The method of Claim 10, wherein the haplotype comprises the A allele for SG08S71 and the G allele for DG00AAHBG.

13. A kit for diagnosing an anxiety disorder comprising at least one agent useful for detecting one or more genetic markers in the Inv8p23 genomic region, wherein the marker is associated with the anxiety disorder.

14. The kit of Claim 13, wherein the anxiety disorder is PD.

15. The kit of Claim 13, wherein the anxiety disorder is a comorbid PD disorder.

16. The kit of Claim 15, wherein the comorbid disorder is selected from the group consisting of: depression, bipolar disorder, obsessive-compulsive disorder,

histrionic personality disorder, family denial and dysfunction, hypercholesterolemia and substance abuse.

17. The kit of Claim 16, wherein the comorbid disorder is selected from the group consisting of: depression, bipolar disorder and hypercholesterolemia.

18. The kit of Claim 13, wherein the anxiety disorder is bipolar disorder.

19. The kit of Claim 13, wherein the genetic marker is the inverted allele of Inv8p23.

20. The kit of Claim 14, wherein one or more genetic markers are selected from the group consisting of: SG08S5, SG08S95, DG8S269, DG8S163, DG8S197, AF131215-2, DG8S127, SG08S120, DG8S179, SG08S27, DG8S261, SG08S71, SG08S32, SG08S517, SG08S70, SG08S102, SG08S73, SG08S76, SG08S26, DG8S242, SG08S15, DG8S257, SG08S138, DG8S161, SG08S520, DG00AAHBG, SG08S508, DG8S156, D8S1695 and DG8S170.

21. The kit of Claim 18, wherein bipolar disorder is comorbid with PD.

22. The kit of Claim 21, wherein one or more markers is selected from the group consisting of the markers listed in FIGS. 6A-6K.

23. The kit of Claim 18, wherein bipolar disorder occurs without PD.

24. The kit of Claim 23, wherein one or more markers are selected from the group consisting of the markers listed in FIGS. 7A-7K.

25. A method of diagnosing panic disorder or a comorbid disorder in an individual comprising detecting a marker in the Inv8p23 genomic region.

26. The method of Claim 25, wherein the marker is selected from the group consisting of: SG08S71, DG8S197, SG08S73, DG8S332, AF131215-4, SG08S5, SG08S520, SG08S95, SG08S508, SG08S102, DG00AAHBG, SG08S70, DG8S161, DG8S298, SG08S506, SG08S15, DG8S249, DG8S148, DG8S269, DG8S127, SG08S93, D8S1695, SG08S517, AF131215-2, AF131215-1, DG8S242, DG8S136, D8S516, DG8S148, SG08S39, D8S1130, DG8S127, DG8S232, DG8S137, DG8S269, D8S550, SG08S507, SG08S507, DG8S245, DG8S197, D8S1825, SG08S27, SG08S27, DG8S257, D8S503, DG8S297, DG8S297, SG08S120, SG08S120, D8S351, DG8S159, D8S1695, D8S1759, SG08S26, SG08S26, D8S1130, DG8S221, D8S1130, D8S1759, DG8S307, DG8S153, DG8S277, DG8S192, D8S1695, DG8S265, DG8S257, DG8S127, DG8S163, DG8S163, DG8S156, DG8S261, DG8S179, SG08S138, SG08S32, SG08S76 and DG8S170.

27. A method of diagnosing bipolar disorder associated with panic disorder in an individual comprising detecting a marker in the Inv8p23 genomic region.

28. The method of Claim 27, wherein the marker is selected from the group consisting of the markers listed in FIGS. 6A-6K.

29. A method of diagnosing bipolar disorder without associated panic disorder in an individual comprising detecting a marker in the Inv8p23 genomic region.

30. The method of Claim 29, wherein the marker is selected from the group consisting of the markers listed in FIGS. 7A-7K.

31. A method for determining the orientation of the Inv8p23 inversion fragment comprising detecting one or more surrogate markers.

32. The method of Claim 31, wherein one or more surrogate markers are selected from the group consisting of: SG08S5, SG08S95, DG8S269, DG8S163, DG8S197, AF131215-2, DG8S127, SG08S120, DG8S179, SG08S27, DG8S261, SG08S71, SG08S32, SG08S517, SG08S70, SG08S102, SG08S73, SG08S76, SG08S26, DG8S242, SG08S15, DG8S257, SG08S138, DG8S161, SG08S520, DG00AAHBG, SG08S508, DG8S156, D8S1695 and DG8S170.

FIG. 1A

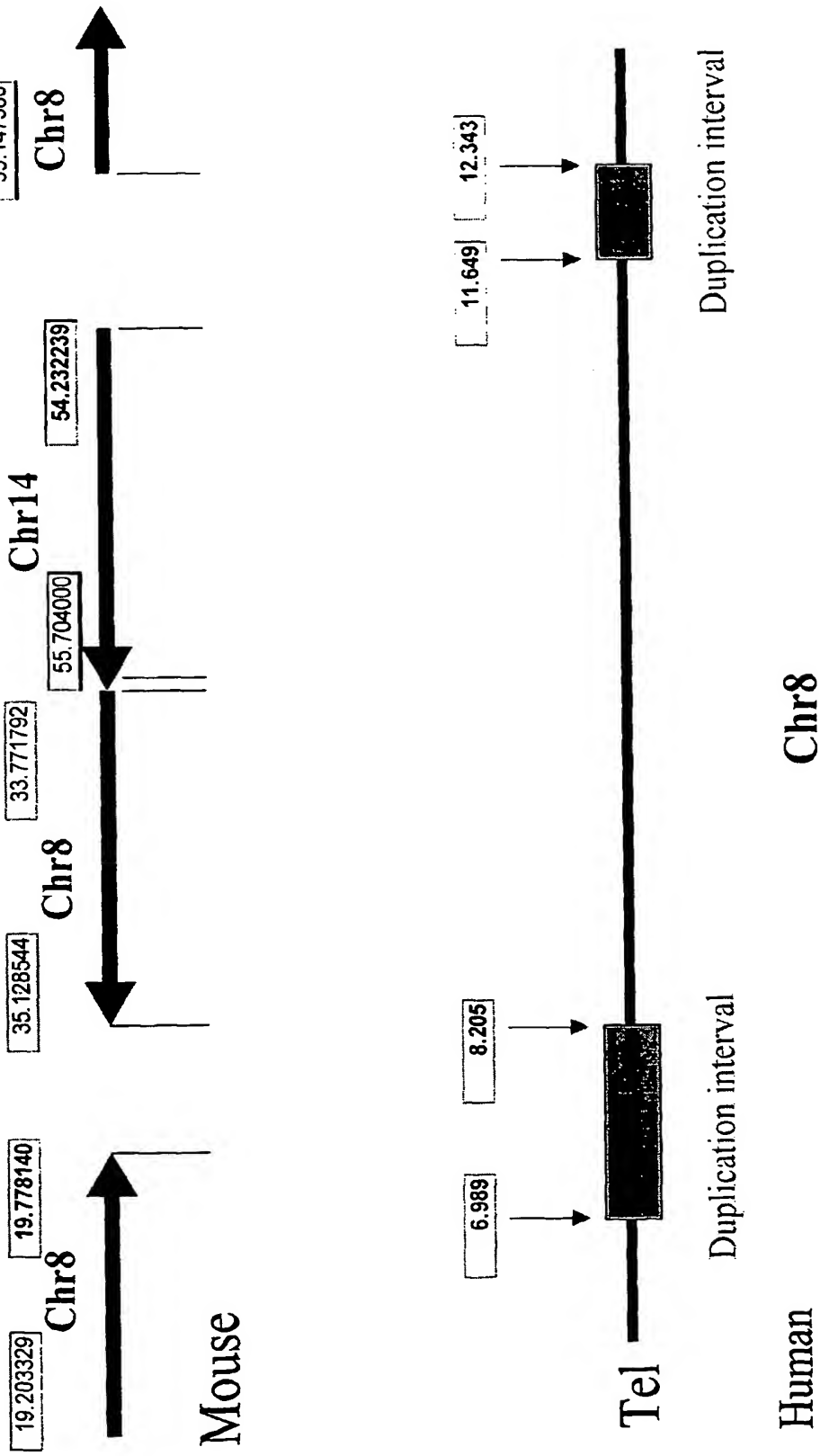

Mouse
Chr8
19.203329
19.778140
Chr8
35.128544
33.771792
Chr14
55.704000
54.232239
Chr8
35.147380
Human
Tel
6.989
8.205
Duplication interval
11.649
12.343
Duplication interval
Chr8

FIG. 1B

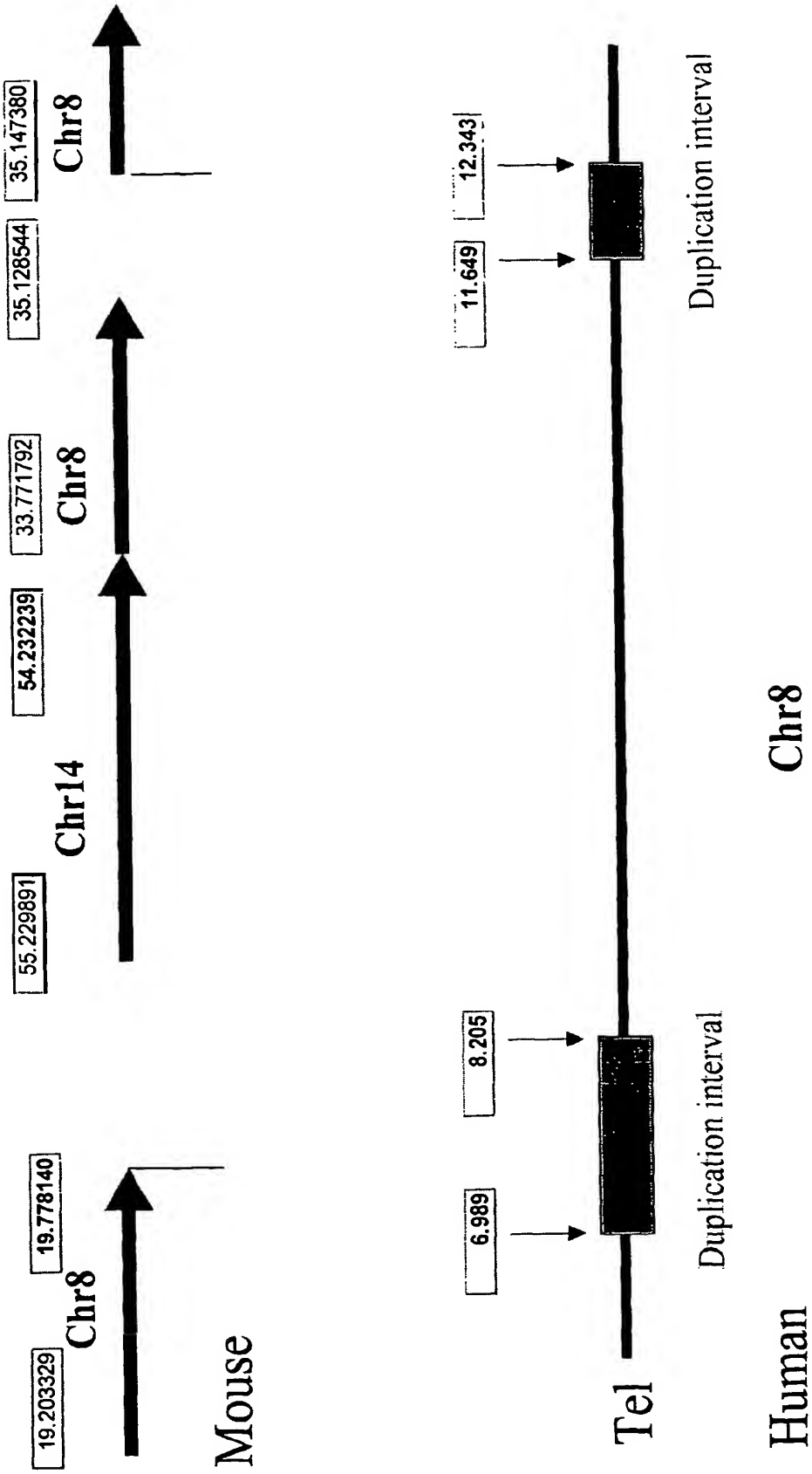

Mouse
Chr8
19.203329
19.778140
Chr14
55.229891
54.232239
Chr8
33.771792
35.128544
Chr8
35.147380
Human
Tel
Chr8
6.989
8.205
Duplication interval
11.649
12.343
Duplication interval

FIG. 1C

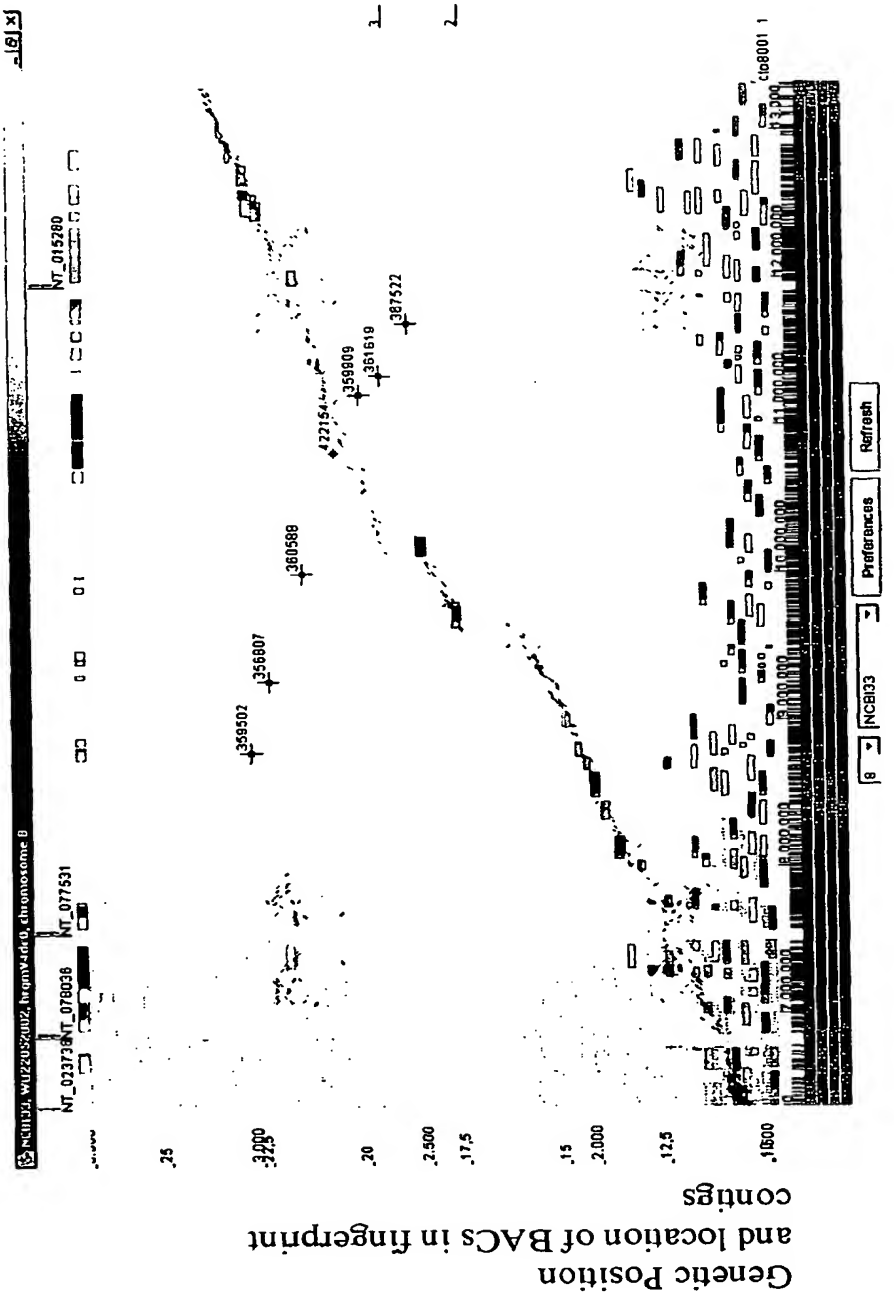

Position
Build 33
Genetic Position
and location of BACs in fingerprint
contigs
Duplication interval
Chr8
Duplication interval

FIG. 2A

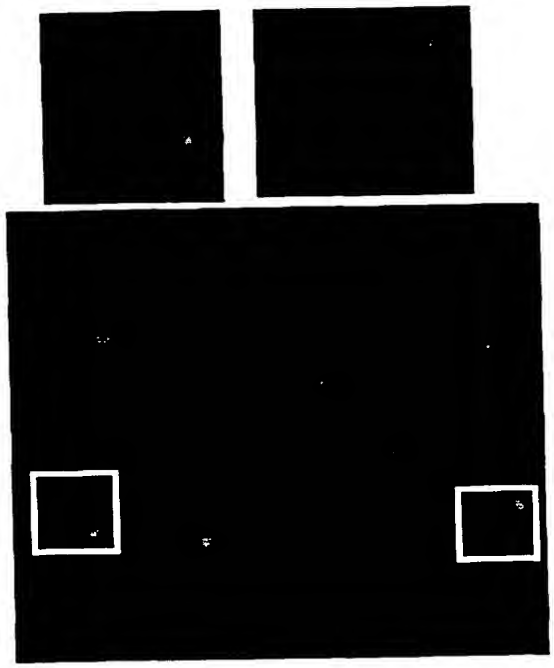


FIG. 2B

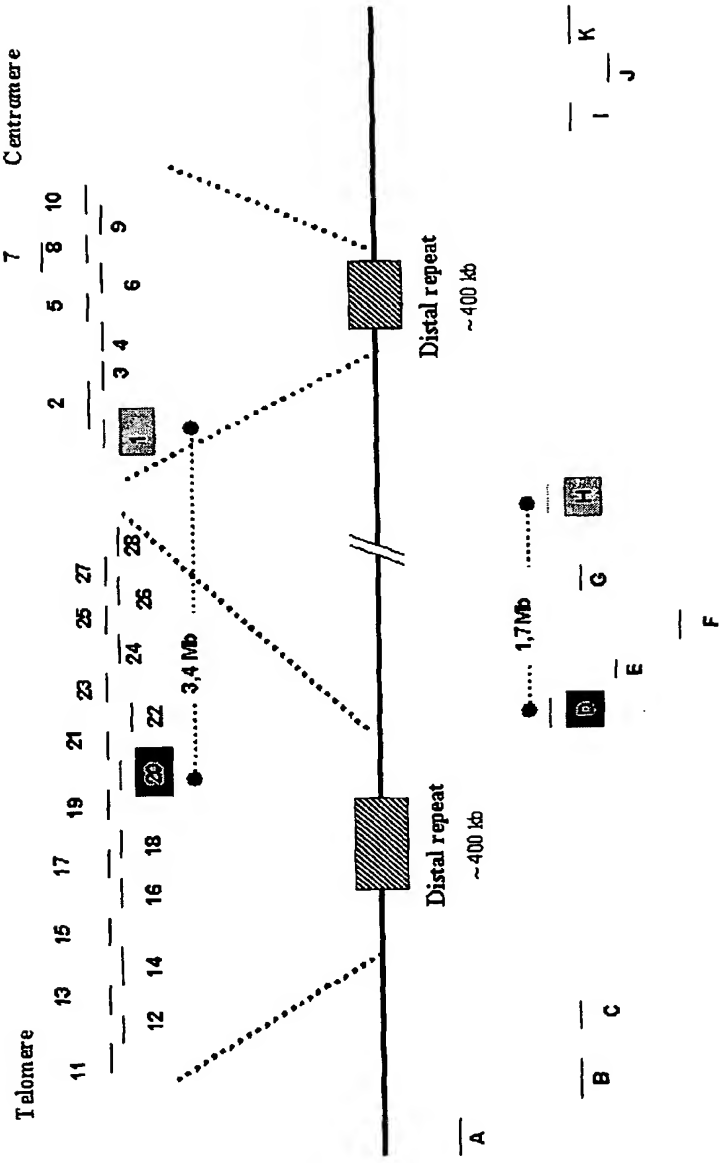

Centromere
Telomere
Distal repeat
~400 kb
Distal repeat
~400 kb
3,4 Mb
1,7Mb
A
B
C
E
F
G
H
I
J
K

FIG. 3. Results of FISH Measurements

Panic Disorder Patients				
Total number	Hz C	Het	Hz Rare	Frequency of Inverted form
47	14	22	11	47%

Controls				
Total number	Hz C	Het	Hz Rare	Frequency of Inverted form
173	64	93	16	36%

FIG. 4. Association results: Orientation at 8p23

Marker	Marker Type	Number Genotyped	R-squared	p-value
SG08S5	SNP	123	0.644	3.21E-25
SG08S95	SNP	101	0.641	5.16E-20
DG8S269	M/I	114	0.617	4.80E-24
DG8S163	M/I	126	0.590	2.03E-23
DG8S197	M/I	120	0.563	2.34E-20
AF131215-2	M/I	116	0.544	4.99E-21
DG8S127	M/I	67	0.489	5.89E-14
SG08S120	SNP	124	0.472	1.75E-17
DG8S179	M/I	91	0.471	1.85E-13
SG08S27	SNP	124	0.457	2.37E-15
DG8S261	M/I	88	0.456	6.63E-12
SG08S71	SNP	119	0.456	9.88E-17
SG08S32	SNP	125	0.448	2.61E-15
SG08S517	SNP	118	0.443	2.34E-15
SG08S70	SNP	120	0.442	5.74E-16
SG08S102	SNP	119	0.440	1.16E-15
SG08S73	SNP	117	0.437	9.84E-15
SG08S76	SNP	120	0.436	6.37E-17
SG08S26	SNP	124	0.433	2.31E-14
DG8S242	M/I	83	0.404	2.34E-10
SG08S15	SNP	126	0.395	1.39E-14
DG8S257	M/I	122	0.370	2.27E-15
SG08S138	SNP	122	0.362	6.68E-12
DG8S161	M/I	121	0.349	6.81E-13
SG08S520	SNP	123	0.337	1.87E-11
DG00AAHBG	SNP	23	0.336	0.0046
SG08S508	SNP	121	0.333	8.52E-12
DG8S156	M/I	115	0.331	2.82E-11
D8S1695	M/I	123	0.309	8.65E-19
DG8S170	M/I	114	0.303	9.06E-11

FIG. 5A. Results for Panic Disorder

Marker	Allele	r	p-val	#aff	aff.freq	#con	con.freq	Top LD marker	Inversion risk allele	Concordance	Comments
SG08S71	0	1.49537	4.32E-05	295	0.605085	740	0.506081 YES	0	YES		
DG8S197	1	1.47085	0.000124	283	0.461131	730	0.367808 YES	1	YES		
SG08S73	1	1.50855	0.000207	292	0.587329	378	0.48545 YES	1	YES		
DG8S332	0	1.49355	0.00022	279	0.340502	726	0.256887	Multiple	YES		
AF131215-4	14	1.4211	0.00029	292	0.523973	795	0.436478	Multiple	YES		
SG08S5	2	1.42574	0.00032	291	0.482818	743	0.395693 YES	2	YES		
SG08S520	1	1.49072	0.000365	292	0.65411	397	0.559194 YES	1	YES		
SG08S95	2	1.41718	0.000601	294	0.496599	586	0.41041 YES	2	YES		
SG08S508	3	1.44504	0.001044	290	0.646552	392	0.558673 YES	3	YES		
SG08S102	2	1.40516	0.002054	295	0.601695	387	0.518088 YES	2	YES		
DG00AAHB(	2	1.57795	0.002763	112	0.508929	391	0.396419 YES	2	YES		
SG08S70	3	1.38687	0.003309	285	0.577193	380	0.496053 YES	3	YES		
DG8S161	2	1.343	0.003748	284	0.646127	735	0.57619 YES	2	YES		
DG8S298	0	1.51561	0.003916	256	0.871094	726	0.816804	0	YES		
SG08S506	2	1.3675	0.004498	292	0.530822	381	0.452756	2	YES		
SG08S15	2	1.30884	0.006102	295	0.501695	713	0.434783 YES	2	YES		
DG8S249	-4	2.09302	0.006519	184	0.065217	682	0.032258	Multiple	YES		
DG8S148	0	1.31082	0.007095	290	0.441379	694	0.376081	Multiple	YES		
DG8S269	-5	1.95983	0.007424	284	0.052817	741	0.027665 YES	Multiple	YES		
DG8S127	1	1.31953	0.007642	269	0.501859	604	0.432947	1	YES		
SG08S93	2	1.37711	0.007751	297	0.234007	705	0.18156	2	YES		
D8S1695	6	1.5987	0.00817	277	0.099278	845	0.064497 YES	Multiple	YES		

FIG. 5B. Results for Panic Disorder

Marker	Allele	r	p-val	#aff	aff.freq	#con	con.freq	Top LD marker	Inversion risk allele	Concordance	Comments
SG08S517	3	1.33373	0.00892	295	0.6	392	0.529337 YES	3	YES		
AF131215-2	4	1.28932	0.010287	283	0.462898	780	0.400641 YES	Multiple	YES		
AF131215-1	0	1.39401	0.010326	272	0.202206	780	0.153846	Multiple	NO		allele not specific for inversion
DG8S242	0	1.40604	0.010364	157	0.436306	476	0.355042 YES	0	YES		
DG8S136	-4	0.540184	0.012974	284	0.03169	779	0.057125	Multiple			
D8S516	2	0.789193	0.013012	299	0.528428	876	0.586758	Multiple			
DG8S148	-2	0.743933	0.014561	290	0.191379	694	0.241354	Multiple			
SG08S39	0	1.28699	0.014737	294	0.564626	523	0.501912	0	YES		
D8S1130	12	1.73607	0.015013	295	0.057627	867	0.034025	Multiple	NO		allele not specific for inversion
DG8S127	0	0.77441	0.015453	269	0.381041	604	0.442881 YES	1			
DG8S232	2	1.28256	0.015593	266	0.441729	726	0.381543	Multiple	YES		
DG8S137	16	27512.1	0.016338	73	0.013697	234	5.05E-07	Multiple	Rare allele		
DG8S269	0	0.790452	0.017797	284	0.522887	741	0.580972	Multiple			
D8S550	2	8.22E-13	0.020519	282	4.57E-15	814	0.005528	Multiple			
SG08S507	3	1.30567	0.021168	294	0.695578	396	0.636364	3	YES		
SG08S507	2	0.765893	0.021168	294	0.304422	396	0.363636	3			
DG8S245	4	0.472897	0.021506	273	0.020147	468	0.041667	Multiple			
DG8S197	2	25908.7	0.023849	283	0.003533	730	1.37E-07	1	Rare allele		
D8S1825	0	1.31206	0.024789	170	0.526471	702	0.458689	Multiple	YES		
SG08S27	2	1.27723	0.024806	294	0.506803	397	0.445844 YES	2	YES		
SG08S27	1	0.782947	0.024806	294	0.493197	397	0.554156	2			
DG8S257	0	0.794875	0.025242	280	0.576786	680	0.631618 YES	Multiple			

FIG. 5C. Results for Panic Disorder

Marker	Allele	r	p-val	#aff	aff.freq	#con	con.freq	Top LD marker	Inversion risk allele	Concordance	Comments
D8S503	2	0.443736	0.026073	220	0.015909	825	0.035152		Multiple		
DG8S297	8	2.06626	0.026116	280	0.032143	727	0.015819		Multiple	Rare allele	
DG8S297	6	0.35351	0.02801	280	0.007143	727	0.019945		Multiple		
SG08S120	2	1.24	0.028331	297	0.5	700	0.446429	YES	2	YES	
SG08S120	0	0.806452	0.028331	297	0.5	700	0.553571		2		
D8S351	12	8.33E-12	0.028377	142	7.72E-14	762	0.009186		Multiple		
DG8S159	-6	18155.3	0.028441	240	0.004166	556	2.30E-07		0	Rare allele	
D8S1695	-4	6.13816	0.030127	277	0.00722	845	0.001183		Multiple	Rare allele	
D8S1759	16	0.180252	0.031831	298	0.001678	866	0.009238		Multiple		
SG08S26	0	1.23132	0.033807	297	0.503367	701	0.451498	YES	0	YES	
SG08S26	2	0.812135	0.033807	297	0.496633	701	0.548502		0		
D8S1130	8	0.686966	0.034226	295	0.067797	867	0.095732		Multiple	YES	
DG8S221	-2	0.69336	0.035493	246	0.123984	292	0.169521		Multiple		
D8S1130	-12	1.56804	0.037716	295	0.061017	867	0.039792		Multiple	YES	
D8S1759	14	0.33195	0.037947	298	0.005034	866	0.015012		Multiple		
DG8S307	8	0.195216	0.038339	60	0.008333	315	0.04127		0		
DG8S153	-2	1.30825	0.038856	159	0.493711	473	0.427061		Multiple	YES	
DG8S277	4	0.32936	0.039967	276	0.005435	674	0.016321		Multiple		
DG8S192	-2	1.47675	0.04181	164	0.140244	568	0.099472		Multiple	YES	
D8S1695	16	1.36E-16	0.046136	277	5.65E-19	845	0.004142		Multiple		
DG8S265	33	5.17242	0.04906	292	0.006849	751	0.001332		Multiple	Rare allele	
DG8S257	-2	1.22755	0.053394	280	0.358929	680	0.313235		Multiple	YES	

FIG. 5D. Results for Panic Disorder

Marker	Allele	r	p-val	#aff	aff.freq	#con	con.freq	Top LD marker	Inversion risk allele	Concordance	Comments
DG8S127	2	1.75E-12	0.054739	269	7.27E-15	604	0.004139		1		
DG8S163	0	1.20367	0.05598	288	0.515625	815	0.469325		0	YES	
DG8S163	3	0.830793	0.05598	288	0.484375	815	0.530675	YES	0		
DG8S156	0	0.838003	0.079775	266	0.524436	777	0.568211	YES	Multiple		
DG8S261	-2	28913.2	0.081789	155	0.003225	549	1.12E-07	YES	0	Rare allele	
DG8S179	7	1.19342	0.085977	271	0.51845	622	0.474276	YES	7	YES	
SG08S138	2	1.1735	0.143127	293	0.288396	746	0.256702	YES	2	YES	
SG08S32	0	1.17317	0.150121	295	0.418644	397	0.380353	YES	0	YES	
SG08S76	2	1.15223	0.195671	293	0.55802	394	0.522843	YES	2	YES	
DG8S170	-8	1.68E-11	0.265216	276	2.22E-14	759	0.001318	YES	Multiple		

FIG. 6A. Allelic Association for Bipolar Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.636132	0.927223	96	0.640625	811	0.65783	0.656009	0.223837	1	4	AC022239-5
0.227291	1.23196	96	0.28125	811	0.24106	0.245314	1.45774	1	0	AC022239-5
0.316779	0.740298	96	0.0625	811	0.0826141	0.0804851	1.0022	1	8	AC022239-5
0.412413	2.12E-12	96	3.93E-15	811	0.00184957	0.0016538	0.671834	1	-12	AC022239-5
0.814911	0.843158	96	0.0104167	811	0.0123305	0.0121279	0.0548008	1	-4	AC022239-5
0.863298	1.20792	96	0.00520832	811	0.00431566	0.00441014	0.0296449	1	-8	AC022239-5
0.160568	1.41548	86	0.139535	574	0.102787	0.107576	1.96887	1	12	AC068974-2
0.421391	1.15389	86	0.313954	574	0.283972	0.287879	0.646434	1	14	AC068974-2
0.367219	0.718343	86	0.0465116	574	0.0635888	0.0613636	0.813054	1	10	AC068974-2
0.23462	0.82084	86	0.395349	574	0.44338	0.437121	1.41263	1	0	AC068974-2
0.860978	1.07122	86	0.0465116	574	0.043554	0.0439394	0.0306702	1	16	AC068974-2
0.134389	2.25E-14	86	1.58E-16	574	0.00696864	0.00606061	2.24106	1	20	AC068974-2
0.440332	0.677047	86	0.0232559	574	0.0339721	0.0325758	0.595417	1	6	AC068974-2
0.477172	0.51057	86	0.00581394	574	0.011324	0.0106061	0.505319	1	8	AC068974-2
0.116188	3.37871	86	0.0174419	574	0.00522648	0.00681818	2.46797	1	18	AC068974-2
0.0433771	64445.2	86	0.00581335	574	9.07E-08	0.000757576	4.08064	1	-4	AC068974-2
0.597138	5.66E-11	86	4.94E-14	574	0.00087108	0.000757576	0.279334	1	2	AC068974-2
0.597138	5.66E-11	86	4.94E-14	574	0.00087108	0.000757576	0.279334	1	15	AC068974-2
0.518787	2.23196	86	0.00581394	574	0.00261324	0.0030303	0.416305	1	-2	AC068974-2
0.597138	5.66E-11	86	4.94E-14	574	0.00087108	0.000757576	0.279334	1	13	AC068974-2
0.160568	1.41548	86	0.139535	574	0.102787	0.107576	1.96887	1	12	AC068974-2
0.421391	1.15389	86	0.313954	574	0.283972	0.287879	0.646434	1	14	AC068974-2
0.367219	0.718343	86	0.0465116	574	0.0635888	0.0613636	0.813054	1	10	AC068974-2
0.23462	0.82084	86	0.395349	574	0.44338	0.437121	1.41263	1	0	AC068974-2
0.860978	1.07122	86	0.0465116	574	0.043554	0.0439394	0.0306702	1	16	AC068974-2
0.134389	2.25E-14	86	1.58E-16	574	0.00696864	0.00606061	2.24106	1	20	AC068974-2
0.440332	0.677047	86	0.0232559	574	0.0339721	0.0325758	0.595417	1	6	AC068974-2
0.477172	0.51057	86	0.00581394	574	0.011324	0.0106061	0.505319	1	8	AC068974-2
0.116188	3.37871	86	0.0174419	574	0.00522648	0.00681818	2.46797	1	18	AC068974-2
0.0433771	64445.2	86	0.00581335	574	9.07E-08	0.000757576	4.08064	1	-4	AC068974-2
0.597138	5.66E-11	86	4.94E-14	574	0.00087108	0.000757576	0.279334	1	2	AC068974-2
0.597138	5.66E-11	86	4.94E-14	574	0.00087108	0.000757576	0.279334	1	15	AC068974-2
0.518787	2.23196	86	0.00581394	574	0.00261324	0.0030303	0.416305	1	-2	AC068974-2
0.597138	5.66E-11	86	4.94E-14	574	0.00087108	0.000757576	0.279334	1	13	AC068974-2
0.754266	0.933961	93	0.145161	780	0.153846	0.152921	0.0979812	1	0	AF131215-1
0.224689	0.81593	93	0.295699	780	0.339744	0.335052	1.47417	1	2	AF131215-1
0.846815	1.0328	93	0.317204	780	0.310256	0.310997	0.0373201	1	-2	AF131215-1
0.462742	0.692307	93	0.0215054	780	0.0307692	0.0297824	0.539254	1	22	AF131215-1
0.271308	1.49821	93	0.0537635	780	0.0365385	0.0383734	1.21012	1	10	AF131215-1
0.100567	2.13967	93	0.0376345	780	0.0179487	0.0200458	2.69654	1	-4	AF131215-1
0.673039	1.16949	93	0.0483871	780	0.0416667	0.0423826	0.178068	1	8	AF131215-1
0.794508	1.09076	93	0.0591398	780	0.0544872	0.0549828	0.06784	1	4	AF131215-1
0.716617	1.26229	93	0.016129	780	0.0128205	0.013173	0.131758	1	-6	AF131215-1
0.501936	1.77E-12	93	2.28E-15	780	0.00128205	0.00114548	0.45084	1	12	AF131215-1
0.634992	6.50E-10	93	4.17E-13	780	0.000641026	0.000572738	0.225352	1	6	AF131215-1
0.0342293	62457	93	0.00537562	780	8.65E-08	0.000572738	4.48322	1	14	AF131215-1
0.187336	0.81879	98	0.484694	780	0.534615	0.529043	1.73844	1	0	AF131215-2
0.152999	1.24434	98	0.454082	780	0.400641	0.406606	2.04209	1	4	AF131215-2
0.699807	0.878137	98	0.0510205	780	0.0576923	0.0569476	0.148673	1	8	AF131215-2
0.399191	1.69E-12	98	3.26E-15	780	0.00192308	0.00170843	0.710761	1	-8	AF131215-2
0.416268	2.00001	98	0.0102041	780	0.0051282	0.00569476	0.660829	1	-4	AF131215-2
0.244447	0.834808	97	0.386598	795	0.430189	0.425448	1.35476	1	0	AF131215-4
0.0185408	1.4314	97	0.525773	795	0.436478	0.446188	5.54432	1	14	AF131215-4
0.482884	0.81344	97	0.0670104	795	0.0811321	0.0795964	0.492344	1	12	AF131215-4
0.0175263	0.170104	97	0.00515467	795	0.0295597	0.0269058	5.64289	1	8	AF131215-4
0.968347	1.02487	97	0.0154639	795	0.0150943	0.0151345	0.00157459	1	16	AF131215-4
0.239428	5.16E-12	97	1.96E-14	795	0.00377358	0.00336323	1.38396	1	18	AF131215-4
0.282932	8.68E-13	97	2.74E-15	795	0.00314465	0.00280269	1.15295	1	10	AF131215-4

FIG. 6B. Allelic Association for Bipolar Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.631289	5.34E-10	97	3.36E-13	795	0.000628931	0.000560538	0.230316	1	4	AF131215-4
0.282669	1.36545	96	0.0833332	801	0.062422	0.06466	1.15421	1	-6	AF188029-1
0.268777	0.834559	96	0.307292	801	0.347066	0.342809	1.22298	1	0	AF188029-1
0.239275	0.525159	96	0.015625	801	0.0293383	0.0278707	1.38486	1	-12	AF188029-1
0.594626	1.10444	96	0.21875	801	0.202247	0.204013	0.283178	1	-4	AF188029-1
0.549289	0.886101	96	0.166667	801	0.184145	0.182274	0.358593	1	-8	AF188029-1
0.821729	0.907332	96	0.03125	801	0.0343321	0.0340022	0.0507699	1	2	AF188029-1
0.171693	1.53673	96	0.0729167	801	0.0486891	0.0512821	1.8681	1	-10	AF188029-1
0.31964	1.29493	96	0.104167	801	0.082397	0.0847269	0.990419	1	-2	AF188029-1
0.0744251	7.99E-12	96	7.05E-14	801	0.00873908	0.00780379	3.18262	1	4	AF188029-1
0.634164	4.00E-10	96	2.50E-13	801	0.00062422	0.000557414	0.226457	1	6	AF188029-1
0.857216	1.02828	95	0.431579	804	0.424751	0.425473	0.0323707	1	0	AF188029-10
0.714284	1.15403	95	0.0421052	804	0.0366915	0.0372636	0.134035	1	-2	AF188029-10
0.44934	0.887774	95	0.378947	804	0.407338	0.404338	0.572316	1	2	AF188029-10
0.691359	0.869309	95	0.0473684	804	0.0541045	0.0533927	0.157618	1	8	AF188029-10
0.244804	1.36547	95	0.1	804	0.0752488	0.0778643	1.35271	1	4	AF188029-10
0.503764	4.00E-10	95	4.98E-13	804	0.00124378	0.00111235	0.446998	1	-4	AF188029-10
0.636436	5.51E-10	95	3.43E-13	804	0.000621891	0.000556174	0.223433	1	6	AF188029-10
0.717684	1.07492	94	0.18617	795	0.175472	0.176603	0.130723	1	0	AF188029-12
0.793631	0.926871	94	0.0744681	795	0.0798742	0.0793026	0.0684341	1	4	AF188029-12
0.634645	1.07691	94	0.579787	795	0.561635	0.563555	0.225814	1	-12	AF188029-12
0.438125	0.844172	94	0.138298	795	0.159748	0.15748	0.601188	1	-4	AF188029-12
0.862499	1.20931	94	0.0053191	795	0.00440252	0.00449944	0.0299959	1	12	AF188029-12
0.775155	0.843242	94	0.0159574	795	0.0188679	0.0185602	0.0815895	1	8	AF188029-12
0.196727	0.82086	97	0.536083	809	0.584672	0.57947	1.66651	1	0	AF188029-7
0.248982	1.19447	97	0.43299	809	0.389988	0.394592	1.32901	1	-4	AF188029-7
0.552933	1.47921	97	0.0154639	809	0.0105068	0.0110375	0.35209	1	2	AF188029-7
0.53362	0.55371	97	0.00515461	809	0.00927071	0.00883002	0.387493	1	-2	AF188029-7
0.340916	1.01E-10	97	2.51E-13	809	0.00247219	0.00220751	0.906983	1	6	AF188029-7
0.191893	3.36041	97	0.0103093	809	0.00309024	0.00386313	1.70302	1	4	AF188029-7
0.639475	1.09324	63	0.5	449	0.477728	0.480469	0.219429	1	0	AF287957-1
0.0672424	0.692098	63	0.309524	449	0.393096	0.382812	3.34908	1	-6	AF287957-1
0.880581	1.06508	63	0.0555556	449	0.0523385	0.0527344	0.0225698	1	-4	AF287957-1
0.475142	1.51682	63	0.0317459	449	0.0211581	0.0224609	0.509994	1	2	AF287957-1
0.0257079	3.04845	63	0.0555556	449	0.0189309	0.0234375	4.97556	1	4	AF287957-1
0.423074	1.60292	63	0.0317461	449	0.0200445	0.0214844	0.641761	1	-2	AF287957-1
0.945167	0.949461	63	0.015873	449	0.0167038	0.0166016	0.0047303	1	-14	AF287957-1
0.11589	1.67752	100	0.065	867	0.0397924	0.0423992	2.472	1	-12	D8S1130
0.968953	0.993269	100	0.245	867	0.246251	0.246122	0.00151491	1	4	D8S1130
0.818831	1.04133	100	0.235	867	0.227797	0.228542	0.0524635	1	-8	D8S1130
0.215316	0.78042	100	0.155	867	0.190311	0.18666	1.53532	1	0	D8S1130
0.973375	0.991546	100	0.095	867	0.0957324	0.0956567	0.00111396	1	8	D8S1130
0.720807	0.927687	100	0.145	867	0.154556	0.153568	0.127721	1	-4	D8S1130
0.441571	1.33774	100	0.045	867	0.0340254	0.0351603	0.592198	1	12	D8S1130
0.978816	1.0202	100	0.01	867	0.00980392	0.0098242	0.000705048	1	16	D8S1130
0.0330666	79563.9	100	0.00499945	867	6.32E-08	0.000517063	4.54233	1	20	D8S1130
0.418155	4.07E-12	100	7.05E-15	867	0.0017301	0.00155119	0.655494	1	2	D8S1130
0.837578	1.03489	99	0.282828	839	0.275924	0.276652	0.0420219	1	0	D8S1469
0.909489	1.01727	99	0.469697	839	0.465435	0.465885	0.0129239	1	4	D8S1469
0.405936	1.18419	99	0.171717	839	0.148987	0.151386	0.69067	1	8	D8S1469
0.237766	0.657424	99	0.0404039	839	0.0601907	0.0581023	1.39379	1	3	D8S1469
0.704869	1.27538	99	0.0151515	839	0.011919	0.0122601	0.143456	1	12	D8S1469
0.20717	0.546562	99	0.0202021	839	0.0363528	0.0346482	1.5911	1	-4	D8S1469
0.504045	1.40E-12	99	1.67E-15	839	0.0011919	0.0010661	0.446409	1	7	D8S1469
0.20041	0.81685	90	0.422222	845	0.472189	0.46738	1.63938	1	0	D8S1695
0.891445	1.04602	90	0.0611111	845	0.0585799	0.0588235	0.0186255	1	10	D8S1695
0.67357	0.899543	90	0.105556	845	0.115976	0.114973	0.177455	1	4	D8S1695
0.666936	0.921986	90	0.216667	845	0.230769	0.229412	0.185207	1	8	D8S1695

FIG. 6C. Allelic Association for Bipolar Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.167565	1.7815	90	0.0444445	845	0.0254438	0.0272727	1.9046	1	12	D8S1695
0.00785119	2.01962	90	0.122222	845	0.064497	0.0700535	7.06711	1	6	D8S1695
0.968082	1.04345	90	0.00555556	845	0.00532544	0.00534759	0.00160115	1	14	D8S1695
0.935689	1.04419	90	0.0222222	845	0.0213018	0.0213904	0.00651081	1	2	D8S1695
0.233447	3.37E-13	90	1.40E-15	845	0.00414201	0.00374332	1.41974	1	16	D8S1695
0.524484	4.71E-13	90	5.58E-16	845	0.00118343	0.00106952	0.405068	1	-4	D8S1695
0.652729	1.90E-10	90	1.12E-13	845	0.000591716	0.000534759	0.202477	1	9	D8S1695
0.348647	0.840511	96	0.213542	643	0.244168	0.240189	0.878374	1	34	D8S1721
0.152584	0.50491	96	0.0208333	643	0.0404355	0.037889	2.04623	1	36	D8S1721
0.916389	1.01665	96	0.411458	643	0.407465	0.407984	0.0110214	1	0	D8S1721
0.785034	0.937634	96	0.119792	643	0.12675	0.125846	0.0744005	1	2	D8S1721
0.064966	1.54723	96	0.140625	643	0.0956454	0.101488	3.40584	1	4	D8S1721
0.0841884	1.79531	96	0.0677084	643	0.0388802	0.0426252	2.98213	1	24	D8S1721
0.360592	8.65E-12	96	2.02E-14	643	0.00233281	0.00202977	0.83583	1	30	D8S1721
0.565421	0.666315	96	0.0104167	643	0.0155521	0.014885	0.330405	1	8	D8S1721
0.807385	0.835523	96	0.0104166	643	0.0124417	0.0121786	0.0594389	1	32	D8S1721
0.23772	1.71E-12	96	6.69E-15	643	0.00388802	0.00338295	1.39406	1	26	D8S1721
0.479937	0.512687	96	0.00520834	643	0.0101089	0.00947226	0.499006	1	38	D8S1721
0.597747	4.11E-11	96	3.20E-14	643	0.000777605	0.00067659	0.278407	1	6	D8S1721
0.597747	4.11E-11	96	3.20E-14	643	0.000777605	0.00067659	0.278407	1	-2	D8S1721
0.597747	4.11E-11	96	3.20E-14	643	0.000777605	0.00067659	0.278407	1	-4	D8S1721
0.142602	0.801487	101	0.564356	866	0.617783	0.612203	2.14965	1	0	D8S1759
0.397877	0.793563	101	0.0742575	866	0.0918014	0.089969	0.714734	1	2	D8S1759
0.33652	1.34288	101	0.069307	866	0.0525404	0.0542916	0.923645	1	10	D8S1759
0.357415	1.22571	101	0.138614	866	0.116051	0.118407	0.846955	1	12	D8S1759
0.962661	1.02935	101	0.0148515	866	0.0144342	0.0144778	0.00219159	1	8	D8S1759
0.466242	1.40237	101	0.029703	866	0.0213626	0.0222337	0.530869	1	6	D8S1759
0.0763703	1.62526	101	0.0940594	866	0.0600462	0.0635988	3.1405	1	4	D8S1759
0.504658	0.533584	101	0.00495051	866	0.00923787	0.00879007	0.445127	1	16	D8S1759
0.544336	0.656155	101	0.00990101	866	0.0150115	0.0144778	0.367562	1	14	D8S1759
0.415705	4.59E-12	101	7.96E-15	866	0.0017321	0.00155119	0.662425	1	-2	D8S1759
0.373568	1.18012	63	0.5	702	0.458689	0.462092	0.791763	1	0	D8S1825
0.322396	0.685215	63	0.0555556	702	0.0790598	0.0771242	0.9792	1	8	D8S1825
0.593823	1.15537	63	0.142857	702	0.126068	0.127451	0.284413	1	10	D8S1825
0.0933142	0.649083	63	0.134921	702	0.193732	0.188889	2.81625	1	6	D8S1825
0.680675	1.59657	63	0.00793648	702	0.00498576	0.00522876	0.169367	1	-2	D8S1825
0.495342	1.216	63	0.126984	702	0.106838	0.108497	0.464902	1	2	D8S1825
0.119951	4.40E-11	63	4.43E-13	702	0.00997151	0.00915033	2.41796	1	12	D8S1825
0.25365	1.96863	63	0.031746	702	0.0163818	0.0176471	1.30309	1	4	D8S1825
0.353489	1.48E-11	63	5.28E-14	702	0.00356125	0.00326797	0.860894	1	-1	D8S1825
0.67839	1.14E-11	63	8.13E-15	702	0.000712251	0.000653595	0.171944	1	14	D8S1825
0.317308	1.18665	79	0.398734	841	0.358502	0.361957	1.00001	1	4	D8S265
0.672194	0.877854	79	0.0759494	841	0.0856124	0.0847826	0.179047	1	18	D8S265
0.0197552	2.24E-11	79	4.07E-13	841	0.0178359	0.0163043	5.4334	1	6	D8S265
0.790552	1.07922	79	0.0949367	841	0.088585	0.0891304	0.0705399	1	14	D8S265
0.11626	1.40175	79	0.202532	841	0.153389	0.157609	2.467	1	0	D8S265
0.265927	0.686637	79	0.056962	841	0.0808561	0.0788043	1.23764	1	-5	D8S265
0.260573	0.757916	79	0.120253	841	0.152794	0.15	1.26571	1	2	D8S265
0.757312	1.12702	79	0.0506329	841	0.0451843	0.0456522	0.0954888	1	12	D8S265
0.0798753	2.92E-12	79	2.98E-14	841	0.010107	0.00923913	3.06744	1	16	D8S265
0.671704	2.16E-10	79	1.29E-13	841	0.00059453	0.000543478	0.179615	1	-3	D8S265
0.462784	1.45E-12	79	2.60E-15	841	0.00178359	0.00163043	0.539152	1	10	D8S265
0.343023	3.46E-12	79	1.03E-14	841	0.00297265	0.00271739	0.899099	1	8	D8S265
0.671704	2.16E-10	79	1.29E-13	841	0.00059453	0.000543478	0.179615	1	20	D8S265
0.671704	2.16E-10	79	1.29E-13	841	0.00059453	0.000543478	0.179615	1	1	D8S265
0.671704	2.16E-10	79	1.29E-13	841	0.00059453	0.000543478	0.179615	1	-4	D8S265
0.700978	1.12637	64	0.101562	762	0.0912074	0.0920097	0.147457	1	0	D8S351
0.160376	1.35485	64	0.257812	762	0.204068	0.208232	1.97068	1	18	D8S351

FIG. 6D. Allelic Association for Bipolar Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.140611	1.36696	64	0.273438	762	0.215879	0.220339	2.17126	1	2	D8S351
0.0828	0.610815	64	0.101563	762	0.156168	0.151937	3.00906	1	6	D8S351
0.714128	0.844366	64	0.0390625	762	0.0459318	0.0453995	0.134188	1	20	D8S351
0.0874914	1.42E-11	64	1.70E-13	762	0.011811	0.0108959	2.91993	1	10	D8S351
0.475253	0.758494	64	0.0546875	762	0.0708661	0.0696126	0.509735	1	4	D8S351
0.329101	0.689311	64	0.0546874	762	0.0774278	0.0756659	0.952431	1	8	D8S351
0.641023	1.70641	64	0.0078125	762	0.00459317	0.00484262	0.217407	1	-2	D8S351
0.627473	1.16309	64	0.101563	762	0.0885827	0.0895884	0.235503	1	16	D8S351
0.230432	0.355762	64	0.00781248	762	0.0216535	0.0205811	1.43819	1	14	D8S351
0.132055	1.12E-12	64	1.03E-14	762	0.00918635	0.00847458	2.26817	1	12	D8S351
0.421546	1.39E-10	64	3.67E-13	762	0.00262467	0.00242131	0.646001	1	22	D8S351
0.720445	0.943516	96	0.322917	825	0.335758	0.334419	0.128067	1	-6	D8S503
0.368534	1.19191	96	0.197917	825	0.171515	0.174267	0.8086	1	-2	D8S503
0.650243	0.928762	96	0.317708	825	0.333939	0.332248	0.205594	1	0	D8S503
0.55512	0.814091	96	0.046875	825	0.0569697	0.0559175	0.348225	1	-4	D8S503
0.143381	1.53953	96	0.0833333	825	0.0557576	0.0586319	2.14129	1	-8	D8S503
0.158706	3.62E-12	96	1.98E-14	825	0.00545455	0.00488599	1.98651	1	4	D8S503
0.776741	0.885429	96	0.03125	825	0.0351515	0.0347448	0.080411	1	2	D8S503
0.416197	9.71E-12	96	1.77E-14	825	0.00181818	0.00162866	0.661029	1	-10	D8S503
0.250019	8.33E-13	96	3.04E-15	825	0.00363636	0.00325733	1.3232	1	-12	D8S503
0.0265688	0.718366	101	0.50495	876	0.586758	0.578301	4.91862	1	2	D8S516
0.12838	1.30831	101	0.247525	876	0.200913	0.205732	2.31198	1	4	D8S516
0.804679	1.06406	101	0.0990099	876	0.0936073	0.0941658	0.0611552	1	-2	D8S516
0.351225	1.2526	101	0.113861	876	0.0930365	0.0951894	0.869025	1	0	D8S516
0.0144311	8.78888	101	0.0148514	876	0.00171234	0.00307062	5.98463	1	8	D8S516
0.262284	0.373998	101	0.00495048	876	0.0131279	0.0122825	1.25666	1	6	D8S516
0.624055	1.37502	101	0.0148514	876	0.0108448	0.011259	0.240209	1	-4	D8S516
0.147569	1.2585	95	0.415789	663	0.361237	0.368074	2.0972	1	6	D8S520
0.0793509	0.702699	95	0.163158	663	0.217195	0.210422	3.07815	1	8	D8S520
0.0737204	0.236635	95	0.00526315	663	0.0218703	0.0197889	3.19818	1	10	D8S520
0.454748	1.19606	95	0.126316	663	0.107843	0.110158	0.558791	1	0	D8S520
0.681499	0.875169	95	0.0578948	663	0.0656109	0.0646438	0.168443	1	-10	D8S520
0.643367	0.886546	95	0.0947369	663	0.105581	0.104222	0.214366	1	2	D8S520
0.155991	1.39865	95	0.136842	663	0.10181	0.106201	2.01267	1	4	D8S520
0.119945	7.46E-12	95	5.10E-14	663	0.00678733	0.00593668	2.41804	1	-12	D8S520
0.604736	9.35E-12	95	7.06E-15	663	0.000754148	0.000659631	0.267911	1	9	D8S520
0.0614545	3.16E-16	95	3.13E-18	663	0.00980392	0.0085752	3.49769	1	-2	D8S520
0.46409	1.17E-13	95	1.77E-16	663	0.0015083	0.00131926	0.536012	1	12	D8S520
0.160754	0.808303	97	0.474227	840	0.527381	0.521878	1.96712	1	0	D8S542
0.00752838	1.67593	97	0.22165	840	0.145238	0.153148	7.14237	1	4	D8S542
0.554142	0.907693	97	0.304124	840	0.325	0.322839	0.349949	1	2	D8S542
0.417889	1.77E-10	97	3.16E-13	840	0.00178571	0.00160085	0.656244	1	-2	D8S542
0.64009	4.66E-14	97	2.78E-17	840	0.000595238	0.000533618	0.218624	1	-12	D8S542
0.709164	1.10417	93	0.0967742	814	0.0884521	0.0893054	0.139113	1	-8	D8S550
0.820119	1.05534	93	0.123656	814	0.117936	0.118523	0.0517073	1	12	D8S550
0.55045	0.826982	93	0.0591398	814	0.0706388	0.0694598	0.356512	1	-6	D8S550
0.07782	0.726739	93	0.22043	814	0.280098	0.27398	3.10985	1	14	D8S550
0.170811	0.72134	93	0.107527	814	0.14312	0.139471	1.87581	1	-2	D8S550
0.064467	2.12756	93	0.0483871	814	0.0233415	0.0259096	3.41856	1	8	D8S550
0.395481	1.28543	93	0.0806452	814	0.0638821	0.0656009	0.722025	1	10	D8S550
0.0975753	1.77163	93	0.0645162	814	0.0374693	0.0402426	2.74473	1	18	D8S550
0.343372	1.63802	93	0.0268817	814	0.0165848	0.0176406	0.897801	1	20	D8S550
0.487631	1.19986	93	0.102151	814	0.0866093	0.0882029	0.481749	1	16	D8S550
0.656014	1.14821	93	0.0698925	814	0.0614251	0.0622933	0.198401	1	0	D8S550
0.162329	6.71E-12	93	3.73E-14	814	0.00552826	0.00496141	1.9524	1	2	D8S550
0.351936	2.92E-14	93	7.19E-17	814	0.002457	0.00220507	0.866466	1	22	D8S550
0.51053	1.09E-10	93	1.35E-13	814	0.0012285	0.00110254	0.43298	1	6	D8S550
0.51053	1.09E-10	93	1.35E-13	814	0.0012285	0.00110254	0.43298	1	4	D8S550

FIG. 6E. Allelic Association for Bipolar Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.136893	0.656779	27	0.5	391	0.603581	0.59689	2.21254	1	1	DG00AAHBG
0.136893	1.52258	27	0.5	391	0.396419	0.40311	2.21254	1	2	DG00AAHBG
0.300119	0.81773	66	0.659091	725	0.702759	0.699115	1.07366	1	2	DG00AAHBH
0.300119	1.2229	66	0.340909	725	0.297241	0.300885	1.07366	1	1	DG00AAHBH
0.247129	0.797863	62	0.629032	811	0.680025	0.676403	1.33946	1	3	DG00AAHBI
0.247129	1.25335	62	0.370968	811	0.319975	0.323597	1.33946	1	1	DG00AAHBI
0.259878	1.25165	86	0.232558	531	0.194915	0.200162	1.26941	1	0	DG8S117
0.259878	0.798948	86	0.767442	531	0.805085	0.799838	1.26941	1	9	DG8S117
0.949601	0.983559	101	0.910891	826	0.912228	0.912082	0.00399521	1	0	DG8S118
0.949601	1.01672	101	0.0891089	826	0.0877724	0.087918	0.00399521	1	5	DG8S118
0.247725	0.826649	87	0.396552	604	0.442881	0.437048	1.33609	1	0	DG8S127
0.51935	0.845888	87	0.103448	604	0.120033	0.117945	0.415183	1	6	DG8S127
0.0968201	1.30975	87	0.5	604	0.432947	0.441389	2.75716	1	1	DG8S127
0.245581	8.27E-12	87	3.44E-14	604	0.00413908	0.00361795	1.34827	1	2	DG8S127
0.677323	0.92813	93	0.736559	646	0.750774	0.748985	0.173155	1	0	DG8S128
0.677323	1.07744	93	0.263441	646	0.249226	0.251015	0.173155	1	4	DG8S128
0.610112	0.920497	92	0.353261	772	0.372409	0.37037	0.260012	1	4	DG8S130
0.334773	0.860241	92	0.5	772	0.537565	0.533565	0.930347	1	0	DG8S130
0.986165	0.987072	92	0.0108696	772	0.0110104	0.0109954	0.000300713	1	-4	DG8S130
0.291287	4.2132	92	0.00543485	772	0.00129533	0.00173611	1.11366	1	12	DG8S130
0.00263246	2.62787	92	0.0869566	772	0.0349741	0.0405093	9.04617	1	-16	DG8S130
0.664976	1.18581	92	0.0434783	772	0.0369171	0.0376157	0.187536	1	8	DG8S130
0.244659	6.34E-13	92	2.47E-15	772	0.00388601	0.00347222	1.35355	1	-12	DG8S130
0.410915	2.49E-11	92	4.84E-14	772	0.00194301	0.00173611	0.676151	1	-8	DG8S130
0.71498	1.08295	98	0.862245	739	0.852503	0.853644	0.133354	1	0	DG8S134
0.592821	0.888749	98	0.132653	739	0.14682	0.145161	0.285961	1	4	DG8S134
0.183435	7.57436	98	0.00510204	739	0.00067659	0.00119474	1.76957	1	2	DG8S134
0.774126	1.04852	92	0.668478	779	0.657895	0.659013	0.0823589	1	0	DG8S136
0.39935	0.705966	92	0.0326087	779	0.0455712	0.0442021	0.710282	1	6	DG8S136
0.986516	1.00499	92	0.076087	779	0.0757381	0.075775	0.000285615	1	-6	DG8S136
0.803865	1.09048	92	0.0543478	779	0.0500642	0.0505166	0.0616768	1	2	DG8S136
0.940311	1.02503	92	0.0597826	779	0.0584082	0.0585534	0.00560683	1	4	DG8S136
0.641268	0.84886	92	0.0489131	779	0.0571245	0.0562572	0.217088	1	-4	DG8S136
0.251291	0.532856	92	0.0163044	779	0.0301669	0.0287026	1.31611	1	-2	DG8S136
0.636514	4.82E-11	92	3.09E-14	779	0.000641849	0.000574053	0.22333	1	-10	DG8S136
0.412203	1.52634	92	0.0271739	779	0.0179718	0.0189437	0.672438	1	8	DG8S136
0.290348	3.25E-12	92	1.05E-14	779	0.00320924	0.00287026	1.11801	1	-8	DG8S136
0.288632	4.2514	92	0.00543481	779	0.00128369	0.00172216	1.12599	1	10	DG8S136
0.0861802	5.69597	92	0.0108696	779	0.00192555	0.00287026	2.94432	1	-14	DG8S136
0.131675	0.554385	19	0.210526	234	0.324786	0.316206	2.27265	1	-2	DG8S137
0.0225578	108030	19	0.0263127	234	2.50E-07	0.00197628	5.20224	1	16	DG8S137
0.24739	1.87447	19	0.131579	234	0.0747863	0.0790514	1.33798	1	2	DG8S137
0.616114	1.29561	19	0.131579	234	0.104701	0.106719	0.251367	1	6	DG8S137
0.971193	1.02778	19	0.0526315	234	0.0512821	0.0513834	0.00130407	1	10	DG8S137
0.558647	0.780645	19	0.184211	234	0.224359	0.221344	0.342052	1	0	DG8S137
0.470942	1.46006	19	0.131579	234	0.0940171	0.0968379	0.519764	1	-4	DG8S137
0.753076	0.825975	19	0.0789474	234	0.0940171	0.0928854	0.0989647	1	4	DG8S137
0.697516	1.55406	19	0.0263158	234	0.017094	0.0177866	0.151068	1	12	DG8S137
0.428411	1.33E-11	19	1.14E-13	234	0.008547	0.00790514	0.627129	1	8	DG8S137
0.692589	1.98E-10	19	4.23E-13	234	0.00213675	0.00197628	0.156297	1	14	DG8S137
0.193815	6.29729	19	0.0263158	234	0.00427351	0.00592885	1.68838	1	18	DG8S137
0.0595046	0.607662	91	0.0824176	761	0.128778	0.123826	3.55114	1	-1	DG8S138
0.0563616	1.65529	91	0.917582	761	0.870565	0.875587	3.64134	1	0	DG8S138
0.634523	4.06E-10	91	2.67E-13	761	0.00065703	0.000586854	0.225977	1	1	DG8S138
0.992623	1.00158	81	0.401235	585	0.400855	0.400901	8.55E-05	1	0	DG8S147
0.990781	1.00198	81	0.598765	585	0.598291	0.598348	0.000133512	1	2	DG8S147
0.610492	1.11E-12	81	9.53E-16	585	0.0008547	0.000750751	0.25946	1	1	DG8S147
0.306745	0.715394	97	0.0515464	694	0.0706052	0.068268	1.04464	1	-4	DG8S148

FIG. 6F. Allelic Association for Bipolar Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.189157	1.24392	97	0.324742	694	0.278818	0.28445	1.72417	1	2	DG8S148
0.0232615	0.644275	97	0.170103	694	0.241354	0.232617	5.14887	1	-2	DG8S148
0.486186	1.11554	97	0.402062	694	0.376081	0.379267	0.484957	1	0	DG8S148
0.499249	1.31378	97	0.0412371	694	0.0317003	0.0328698	0.456533	1	4	DG8S148
0.00372723	78879.2	97	0.0103083	694	1.32E-07	0.00126422	8.41214	1	6	DG8S148
0.469286	5.48E-11	97	7.91E-14	694	0.00144092	0.00126422	0.523658	1	-17	DG8S148
0.113102	1.39634	50	0.51	473	0.427061	0.43499	2.51033	1	-2	DG8S153
0.755554	0.90203	50	0.11	473	0.120507	0.119503	0.0969232	1	0	DG8S153
0.630406	0.626936	50	0.01	473	0.0158562	0.0152964	0.231511	1	-6	DG8S153
0.0818552	0.540989	50	0.0799999	473	0.138478	0.132887	3.02767	1	8	DG8S153
0.843493	0.938637	50	0.12	473	0.12685	0.126195	0.0389776	1	6	DG8S153
0.940056	1.03404	50	0.06	473	0.0581395	0.0583174	0.005655	1	10	DG8S153
0.693522	0.815219	50	0.04	473	0.0486258	0.0478011	0.155299	1	2	DG8S153
0.836	1.13938	50	0.0299999	473	0.0264271	0.0267686	0.0428544	1	14	DG8S153
0.934189	1.05269	50	0.0299999	473	0.0285412	0.0286807	0.00681865	1	4	DG8S153
0.315528	1.24E-11	50	6.58E-14	473	0.00528541	0.00478011	1.0074	1	12	DG8S153
0.480374	2.37881	50	0.0100001	473	0.00422832	0.00478011	0.498013	1	-4	DG8S153
0.691922	0.906871	43	0.290698	453	0.311258	0.309476	0.157012	1	4	DG8S155
0.260822	1.47027	43	0.139535	453	0.0993377	0.102823	1.26439	1	8	DG8S155
0.613999	1.38763	43	0.0348837	453	0.0253863	0.0262097	0.254392	1	14	DG8S155
0.980677	0.990648	43	0.0930232	453	0.093819	0.09375	0.000586596	1	2	DG8S155
0.316582	0.759107	43	0.197674	453	0.245033	0.240927	1.00302	1	6	DG8S155
0.682666	0.825983	43	0.0581394	453	0.0695364	0.0685484	0.16714	1	10	DG8S155
0.45664	1.29768	43	0.127907	453	0.101545	0.103831	0.554118	1	0	DG8S155
0.319621	0.515476	43	0.0232558	453	0.0441501	0.0423387	0.990498	1	12	DG8S155
0.331856	3.54119	43	0.0116279	453	0.00331126	0.00403226	0.941641	1	-10	DG8S155
0.128687	10.6473	43	0.011628	453	0.00110374	0.00201613	2.30827	1	-16	DG8S155
0.670119	8.40E-13	43	9.28E-16	453	0.00110375	0.00100806	0.181463	1	-2	DG8S155
0.128687	10.6473	43	0.011628	453	0.00110374	0.00201613	2.30827	1	-12	DG8S155
0.460382	1.52E-11	43	5.04E-14	453	0.00331126	0.00302419	0.544966	1	16	DG8S155
0.40513	1.14371	89	0.41573	777	0.383526	0.386836	0.693046	1	6	DG8S156
0.245044	0.83143	89	0.522472	777	0.568211	0.56351	1.35134	1	0	DG8S156
0.20887	1.63567	89	0.0505618	777	0.0315315	0.0334873	1.57924	1	-6	DG8S156
0.401222	2.9209	89	0.00561798	777	0.0019305	0.00230947	0.704662	1	3	DG8S156
0.265718	0.376077	89	0.00561801	777	0.0148005	0.0138568	1.23872	1	9	DG8S156
0.33947	0.732904	82	0.920732	556	0.940647	0.938088	0.912432	1	0	DG8S159
0.475481	1.29748	82	0.0609756	556	0.0476619	0.049373	0.509211	1	-2	DG8S159
0.502159	1.57525	82	0.0182927	556	0.0116906	0.0125392	0.450371	1	2	DG8S159
0.365296	0.8673	95	0.389474	735	0.42381	0.41988	0.819604	1	0	DG8S161
0.365296	1.153	95	0.610526	735	0.57619	0.58012	0.819604	1	2	DG8S161
0.104578	1.27982	97	0.530928	815	0.469325	0.475877	2.6343	1	0	DG8S163
0.104578	0.781357	97	0.469072	815	0.530675	0.524123	2.6343	1	3	DG8S163
0.616405	1.09015	83	0.349398	759	0.33004	0.331948	0.250952	1	0	DG8S170
0.438895	0.877032	83	0.620482	759	0.650856	0.647862	0.599168	1	2	DG8S170
0.413258	1.60494	83	0.0240964	759	0.0151515	0.0160333	0.66941	1	-4	DG8S170
0.266779	4.59391	83	0.00602407	759	0.00131753	0.00178147	1.23323	1	-19	DG8S170
0.519255	9.02E-11	83	1.19E-13	759	0.00131752	0.00118765	0.415373	1	-2	DG8S170
0.519255	9.02E-11	83	1.19E-13	759	0.00131752	0.00118765	0.415373	1	-8	DG8S170
0.139776	0.791041	95	0.378947	643	0.435459	0.428184	2.18043	1	14	DG8S177
0.693639	0.675133	95	0.00526316	643	0.00777605	0.00745257	0.155174	1	20	DG8S177
0.278312	1.49758	95	0.0526316	643	0.0357698	0.0379404	1.17531	1	10	DG8S177
0.364696	1.17506	95	0.268421	643	0.237947	0.24187	0.821658	1	12	DG8S177
0.653875	1.12247	95	0.105263	643	0.0948678	0.096206	0.201049	1	18	DG8S177
0.82908	1.05125	95	0.131579	643	0.125972	0.126694	0.0466051	1	16	DG8S177
0.457666	9.87E-11	95	1.54E-13	643	0.00155521	0.00135501	0.551597	1	2	DG8S177
0.880841	0.951725	95	0.0578947	643	0.0606532	0.0602981	0.0224708	1	0	DG8S177
0.724908	0.944594	87	0.511494	622	0.525723	0.523977	0.123839	1	0	DG8S179
0.724908	1.05866	87	0.488506	622	0.474277	0.476023	0.123839	1	7	DG8S179

FIG. 6G. Allelic Association for Bipolar Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.762507	0.948204	95	0.263158	625	0.2736	0.272222	0.0913188	1	10	DG8S181
0.143746	0.763986	95	0.21579	625	0.2648	0.258333	2.1374	1	12	DG8S181
0.180075	1.39938	95	0.121053	625	0.0896	0.09375	1.79701	1	0	DG8S181
0.624977	1.1672	95	0.0684211	625	0.0592	0.0604167	0.238934	1	14	DG8S181
0.0951353	0.638224	95	0.0789474	625	0.1184	0.113194	2.78526	1	4	DG8S181
0.0858196	1.43454	95	0.184211	625	0.136	0.142361	2.95109	1	8	DG8S181
0.846265	0.91141	95	0.0263158	625	0.0288	0.0284722	0.0375919	1	18	DG8S181
0.953238	0.93953	95	0.00526315	625	0.0056	0.00555556	0.00343875	1	6	DG8S181
0.506027	1.47192	95	0.0210526	625	0.0144	0.0152778	0.442274	1	16	DG8S181
0.205305	3.31384	95	0.0105263	625	0.0032	0.00416667	1.60423	1	-2	DG8S181
0.84956	0.821429	95	0.00526316	625	0.0064	0.00625	0.0359784	1	2	DG8S181
0.351987	0.752231	68	0.897059	818	0.920538	0.918736	0.866281	1	0	DG8S182
0.351987	1.32938	68	0.102941	818	0.0794621	0.0812641	0.866281	1	-3	DG8S182
0.457958	0.867661	81	0.734568	641	0.76131	0.75831	0.550882	1	0	DG8S188
0.457958	1.15252	81	0.265432	641	0.23869	0.24169	0.550882	1	-1	DG8S188
0.419757	1.1713	59	0.59322	568	0.554577	0.558214	0.650995	1	0	DG8S192
0.51537	1.17558	59	0.194915	568	0.170775	0.173046	0.423149	1	2	DG8S192
0.207352	0.338217	59	0.00847457	568	0.0246479	0.023126	1.58982	1	16	DG8S192
0.677246	1.16807	59	0.0762712	568	0.0660211	0.0669856	0.173242	1	4	DG8S192
0.245975	0.658408	59	0.0677967	568	0.0994718	0.0964912	1.34602	1	-2	DG8S192
0.57227	0.800065	59	0.059322	568	0.0730634	0.0717703	0.318899	1	12	DG8S192
0.319662	2.38E-12	59	1.05E-14	568	0.00440141	0.00398724	0.990328	1	8	DG8S192
0.373517	7.84E-11	59	2.77E-13	568	0.00352113	0.00318979	0.791929	1	10	DG8S192
0.529354	1.62E-13	59	2.87E-16	568	0.00176056	0.0015949	0.395632	1	-4	DG8S192
0.529354	1.62E-13	59	2.87E-16	568	0.00176056	0.0015949	0.395632	1	14	DG8S192
0.0217834	0.700803	97	0.546392	730	0.632192	0.622128	5.26301	1	0	DG8S197
0.0217834	1.42694	97	0.453608	730	0.367808	0.377872	5.26301	1	1	DG8S197
0.0928033	1.29436	98	0.566327	677	0.502216	0.510323	2.82506	1	0	DG8S201
0.935151	0.98689	98	0.331633	677	0.334564	0.334194	0.00662036	1	4	DG8S201
0.0212726	0.54752	98	0.0765306	677	0.131462	0.124516	5.30432	1	-2	DG8S201
0.628116	0.798125	98	0.0255102	677	0.0317578	0.0309677	0.234624	1	2	DG8S201
0.779148	0.906211	97	0.948454	735	0.953061	0.952524	0.0786405	1	0	DG8S212
0.779148	1.1035	97	0.0515464	735	0.0469388	0.047476	0.0786405	1	2	DG8S212
0.501767	0.866166	53	0.613207	392	0.646684	0.642697	0.451197	1	4	DG8S215
0.469316	1.1675	53	0.386792	392	0.350765	0.355056	0.523585	1	0	DG8S215
0.476067	6.32E-11	53	1.62E-13	392	0.00255102	0.00224719	0.507858	1	2	DG8S215
0.0493249	1.4219	83	0.445783	292	0.361301	0.38	3.86426	1	0	DG8S221
0.492758	1.14224	83	0.301205	292	0.273973	0.28	0.470498	1	5	DG8S221
0.357409	0.668952	83	0.0361446	292	0.0530822	0.0493333	0.846976	1	7	DG8S221
0.922396	0.974125	83	0.120482	292	0.123288	0.122667	0.00948998	1	4	DG8S221
0.00198543	0.416254	83	0.0783132	292	0.169521	0.149333	9.56296	1	-2	DG8S221
0.868514	0.878049	83	0.0120482	292	0.0136986	0.0133333	0.0274055	1	1	DG8S221
0.479182	4.03E-11	83	6.91E-14	292	0.00171233	0.00133333	0.500724	1	8	DG8S221
0.655811	1.76363	83	0.00602407	292	0.00342466	0.004	0.198652	1	-1	DG8S221
0.787685	1.04516	94	0.340426	726	0.330578	0.331707	0.0725321	1	0	DG8S232
0.458767	1.12444	94	0.409575	726	0.381543	0.384756	0.548901	1	2	DG8S232
0.0538268	0.622749	94	0.0957447	726	0.145317	0.139634	3.71806	1	-8	DG8S232
0.695287	1.11362	94	0.0904255	726	0.0819559	0.0829268	0.153421	1	-4	DG8S232
0.965139	0.982323	94	0.0372341	726	0.0378788	0.0378049	0.00191022	1	4	DG8S232
0.519055	1.38954	94	0.0265958	726	0.0192837	0.020122	0.41577	1	-2	DG8S232
0.621627	8.43E-13	94	5.81E-16	726	0.000688705	0.000609756	0.243588	1	-6	DG8S232
0.323362	1.26E-10	94	3.48E-13	726	0.00275482	0.00243902	0.9753	1	6	DG8S232
0.0309669	2.01171	96	0.953125	672	0.90997	0.915365	4.6548	1	0	DG8S238
0.0309669	0.497086	96	0.0468749	672	0.0900298	0.0846354	4.6548	1	-8	DG8S238
0.120276	0.73024	57	0.570176	476	0.644958	0.636961	2.41372	1	4	DG8S242
0.120276	1.36941	57	0.429825	476	0.355042	0.363039	2.41372	1	0	DG8S242
0.130702	1.55627	93	0.930108	468	0.895299	0.90107	2.28415	1	0	DG8S245
0.926667	0.969323	93	0.0591398	468	0.0608974	0.0606061	0.00847127	1	-4	DG8S245

FIG. 6H. Allelic Association for Bipolar Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.326233	0.851099	84	0.529762	682	0.569648	0.565274	0.963792	1	0	DG8S249
0.396524	1.19007	84	0.208333	682	0.181085	0.184073	0.718843	1	-19	DG8S249
0.92549	1.06008	84	0.0178572	682	0.0168622	0.0169713	0.00874613	1	-17	DG8S249
0.278027	0.382948	84	0.00595238	682	0.0153959	0.0143603	1.17671	1	-21	DG8S249
0.901316	0.966221	84	0.0952381	682	0.0982405	0.0979112	0.0153757	1	-2	DG8S249
0.701106	1.35743	84	0.0119048	682	0.00879766	0.00913838	0.147323	1	6	DG8S249
0.356731	1.39991	84	0.0595237	682	0.0432551	0.0450392	0.849367	1	2	DG8S249
0.0202989	3.87E-12	84	6.64E-14	682	0.0168622	0.0150131	5.386	1	-6	DG8S249
0.95049	0.95464	84	0.0119047	682	0.0124633	0.0124021	0.00385535	1	4	DG8S249
0.201691	1.05E-11	84	5.43E-14	682	0.00513197	0.00456919	1.63009	1	-1	DG8S249
0.0945611	1.89873	84	0.0595238	682	0.0322581	0.035248	2.79496	1	-4	DG8S249
0.394709	1.31798	96	0.0677083	584	0.052226	0.0544118	0.724387	1	-10	DG8S250
0.354176	0.841246	96	0.213542	584	0.244007	0.239706	0.85844	1	-4	DG8S250
0.668478	1.10211	96	0.140625	584	0.129281	0.130882	0.183387	1	2	DG8S250
0.278992	1.22976	96	0.223958	584	0.190068	0.194853	1.17199	1	4	DG8S250
0.0750708	0.71287	96	0.192708	584	0.250856	0.242647	3.16851	1	0	DG8S250
0.481973	1.23503	96	0.078125	584	0.0642123	0.0661765	0.494395	1	-2	DG8S250
0.896366	1.10718	96	0.0104167	584	0.00941781	0.00955882	0.0169659	1	8	DG8S250
0.0784271	2.81235	96	0.0260417	584	0.00941781	0.0117647	3.0972	1	-8	DG8S250
0.695254	0.790201	96	0.015625	584	0.0196918	0.0191176	0.153456	1	6	DG8S250
0.760007	1.22011	96	0.015625	584	0.0128425	0.0132353	0.0933133	1	-12	DG8S250
0.90986	1.0747	96	0.015625	584	0.0145548	0.0147059	0.0128176	1	-6	DG8S250
0.269464	7.68E-14	96	2.64E-16	584	0.00342466	0.00294118	1.21947	1	12	DG8S250
0.751011	0.949842	92	0.619565	680	0.631618	0.630181	0.100683	1	0	DG8S257
0.95664	1.00924	92	0.315217	680	0.313235	0.313472	0.00295614	1	-2	DG8S257
0.770454	1.11429	92	0.0489131	680	0.0441176	0.0446891	0.0851363	1	-6	DG8S257
0.942723	1.05652	92	0.0108696	680	0.0102941	0.0103627	0.00516202	1	2	DG8S257
0.187243	7.42615	92	0.00543476	680	0.000735298	0.00129534	1.73918	1	-9	DG8S257
0.599971	1.11205	83	0.216867	637	0.199372	0.201389	0.275039	1	15	DG8S258
0.208266	1.23457	83	0.602409	637	0.55102	0.556944	1.58344	1	18	DG8S258
0.0488866	0.650118	83	0.150602	637	0.214286	0.206944	3.87924	1	12	DG8S258
0.0470735	1.80E-15	83	2.29E-17	637	0.0125589	0.0111111	3.94276	1	0	DG8S258
0.483799	3.57E-11	83	5.61E-14	637	0.00156986	0.00138889	0.490289	1	33	DG8S258
0.483799	3.57E-11	83	5.61E-14	637	0.00156986	0.00138889	0.490289	1	24	DG8S258
0.706939	1.23358	83	0.0240964	637	0.0196232	0.0201389	0.141353	1	21	DG8S258
0.0375366	58362.2	83	0.0060233	637	1.04E-07	0.000694444	4.3259	1	11	DG8S258
0.759909	0.936597	57	0.692982	549	0.70674	0.705446	0.0933912	1	2	DG8S261
0.759909	1.06769	57	0.307018	549	0.29326	0.294554	0.0933912	1	0	DG8S261
0.969404	1.02076	55	0.0363637	561	0.0356506	0.0357143	0.00147113	1	-4	DG8S262
0.683866	0.921811	55	0.509091	561	0.529412	0.527597	0.165806	1	0	DG8S262
0.843058	0.931097	55	0.0818182	561	0.087344	0.0868506	0.0391974	1	-10	DG8S262
0.216881	1.32844	55	0.272727	561	0.220143	0.224838	1.52489	1	2	DG8S262
0.603723	0.739227	55	0.0272726	561	0.0365419	0.0357143	0.269417	1	-2	DG8S262
0.767637	0.880436	55	0.0545455	561	0.0614973	0.0608766	0.0873005	1	4	DG8S262
0.86772	1.1358	55	0.0181818	561	0.0160428	0.0162338	0.0277405	1	6	DG8S262
0.386639	2.81E-11	55	1.01E-13	561	0.00356506	0.00324675	0.749485	1	8	DG8S262
0.150491	8.87E-13	55	8.79E-15	561	0.00980392	0.00892857	2.06726	1	-14	DG8S262
0.233927	1.24619	97	0.231959	751	0.195073	0.199292	1.41682	1	15	DG8S265
0.823939	1.03482	97	0.56701	751	0.558589	0.559552	0.0494978	1	18	DG8S265
0.0311666	2.75E-12	97	3.53E-14	751	0.0126498	0.0112028	4.64376	1	0	DG8S265
0.189591	0.772375	97	0.170103	751	0.20972	0.205189	1.7208	1	12	DG8S265
0.485625	4.63E-11	97	6.17E-14	751	0.00133156	0.00117925	0.486205	1	33	DG8S265
0.473203	1.44523	97	0.0257732	751	0.017976	0.0188679	0.514486	1	21	DG8S265
0.925649	1.10659	97	0.00515466	751	0.00466045	0.00471698	0.00870867	1	-6	DG8S265
0.631697	1.08177	85	0.476471	615	0.456911	0.459286	0.229767	1	-2	DG8S266
0.777865	0.954415	85	0.423529	615	0.434959	0.433571	0.0795817	1	0	DG8S266
0.74591	0.916458	85	0.1	615	0.10813	0.107143	0.105	1	-4	DG8S266
0.484424	1.11477	97	0.417526	741	0.391363	0.394391	0.488888	1	-4	DG8S269

FIG. 6I. Allelic Association for Bipolar Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.111271	0.783298	97	0.520619	741	0.580972	0.573986	2.53608	1	0	DG8S269
0.0207518	2.31734	97	0.0618557	741	0.0276653	0.0316229	5.34751	1	-5	DG8S269
0.0125222	0.536447	50	0.19	567	0.304233	0.294976	6.23539	1	-2	DG8S271
0.0965033	1.44289	50	0.69	567	0.606702	0.613452	2.7624	1	0	DG8S271
0.673308	1.16162	50	0.1	567	0.0873016	0.0883306	0.177756	1	2	DG8S271
0.0272474	11.5511	50	0.02	567	0.00176366	0.00324149	4.87506	1	4	DG8S271
0.201722	2.20843	95	0.0210526	674	0.00964392	0.0110533	1.62986	1	-6	DG8S277
0.0361748	1.41743	95	0.347368	674	0.272997	0.282185	4.38885	1	10	DG8S277
0.63596	0.921088	95	0.268421	674	0.284866	0.282835	0.224065	1	0	DG8S277
0.865799	0.951486	95	0.0736842	674	0.0771513	0.076723	0.0285598	1	-2	DG8S277
0.0947257	0.726956	95	0.189474	674	0.243323	0.236671	2.79217	1	2	DG8S277
0.241235	0.640208	95	0.0368422	674	0.0563798	0.0539662	1.37337	1	8	DG8S277
0.956609	0.96694	95	0.0157895	674	0.0163205	0.0162549	0.00296041	1	4	DG8S277
0.25043	1.15E-12	95	4.27E-15	674	0.0037092	0.00325098	1.32091	1	14	DG8S277
0.0578435	2.71467	95	0.0315789	674	0.0118694	0.0143043	3.59816	1	6	DG8S277
0.161764	0.304808	95	0.00526316	674	0.0170623	0.0156047	1.95766	1	12	DG8S277
0.577818	1.58274	95	0.0105263	674	0.00667656	0.00715215	0.309775	1	-4	DG8S277
0.765951	1.05169	83	0.60241	576	0.590278	0.591806	0.0886105	1	0	DG8S285
0.684656	0.929874	83	0.307229	576	0.322917	0.320941	0.164932	1	2	DG8S285
0.742479	1.10872	83	0.0783133	576	0.0711805	0.0720789	0.10796	1	1	DG8S285
0.716093	0.768292	83	0.0120482	576	0.015625	0.0151745	0.132267	1	-1	DG8S285
0.571041	0.909551	87	0.586207	500	0.609	0.605622	0.320945	1	0	DG8S291
0.9626	1.00913	87	0.235632	500	0.234	0.234242	0.00219873	1	4	DG8S291
0.0818958	1.52991	87	0.149425	500	0.103	0.109881	3.02687	1	2	DG8S291
0.0664868	0.38118	87	0.0172414	500	0.044	0.0400341	3.36769	1	-2	DG8S291
0.858761	1.15116	87	0.0114942	500	0.01	0.0102215	0.0316667	1	6	DG8S291
0.988027	1.00277	80	0.7125	729	0.711934	0.71199	0.000225189	1	2	DG8S292
0.988027	0.997243	80	0.2875	729	0.288066	0.28801	0.000225189	1	0	DG8S292
0.831828	1.03936	90	0.255555	727	0.248281	0.249082	0.0450957	1	12	DG8S297
0.551964	0.905275	90	0.327778	727	0.350069	0.347613	0.353811	1	0	DG8S297
0.593688	0.820513	90	0.0444444	727	0.0536451	0.0526316	0.284622	1	14	DG8S297
0.933583	0.980521	90	0.127778	727	0.129986	0.129743	0.00694513	1	4	DG8S297
0.974297	0.984668	90	0.0277778	727	0.0281981	0.0281518	0.00103809	1	10	DG8S297
0.290398	1.27318	90	0.15	727	0.121733	0.124847	1.11778	1	16	DG8S297
0.223202	0.347581	90	0.00555553	727	0.0158184	0.0146879	1.48366	1	8	DG8S297
0.464751	1.4551	90	0.0277778	727	0.0192572	0.0201958	0.534428	1	18	DG8S297
0.0530974	3.64899	90	0.0222222	727	0.00618982	0.00795594	3.74085	1	-4	DG8S297
0.379013	0.552111	90	0.0111111	727	0.019945	0.0189718	0.773901	1	6	DG8S297
0.62894	7.55E-10	90	5.20E-13	727	0.000687757	0.000611995	0.233501	1	2	DG8S297
0.146628	6.57E-12	90	4.09E-14	727	0.00618982	0.00550796	2.10699	1	-2	DG8S297
0.484916	0.874705	98	0.795918	726	0.816804	0.81432	0.487787	1	0	DG8S298
0.503167	1.13979	98	0.193878	726	0.174242	0.176578	0.448251	1	2	DG8S298
0.864815	1.14116	98	0.0102041	726	0.00895316	0.00910194	0.0289844	1	1	DG8S298
0.945889	1.01429	87	0.816092	602	0.813953	0.814224	0.00460641	1	0	DG8S301
0.945889	0.985915	87	0.183908	602	0.186047	0.185776	0.00460641	1	1	DG8S301
0.575354	1.0993	86	0.366279	666	0.344595	0.347074	0.313806	1	26	DG8S302
0.771509	0.950489	86	0.30814	666	0.319069	0.317819	0.0843334	1	28	DG8S302
0.345297	0.781118	86	0.0988373	666	0.123123	0.120346	0.890667	1	24	DG8S302
0.629411	1.17834	86	0.0639535	666	0.0548048	0.0558511	0.23286	1	30	DG8S302
0.882719	1.03304	86	0.162791	666	0.158408	0.15891	0.0217632	1	0	DG8S302
0.701115	1.07445	88	0.767045	756	0.753968	0.755332	0.147314	1	2	DG8S303
0.30383	2.47127	88	0.0113637	756	0.00462963	0.00533175	1.05731	1	4	DG8S303
0.569859	0.897809	88	0.221591	756	0.240741	0.238744	0.322918	1	-2	DG8S303
0.638818	9.80E-13	88	6.48E-16	756	0.000661376	0.000592417	0.220291	1	0	DG8S303
0.323683	1.27067	51	0.754902	315	0.707936	0.714481	0.974008	1	4	DG8S307
0.573528	0.843182	51	0.137255	315	0.15873	0.155738	0.316815	1	0	DG8S307
0.922209	0.948194	51	0.0392157	315	0.0412698	0.0409836	0.00953574	1	8	DG8S307
0.425627	0.726679	51	0.0686275	315	0.0920635	0.0887978	0.634727	1	-4	DG8S307

FIG. 6J. Allelic Association for Bipolar Disorder

p-val	r	#aff	aff.freq	#con	con.fr q	H0.freq	X2	info	allele	marker
0.171256	0.801526	90	0.577778	689	0.630624	0.624519	1.87192	1	0	DG8S308
0.265085	1.25437	90	0.2	689	0.166183	0.17009	1.242	1	2	DG8S308
0.369125	1.26411	90	0.111111	689	0.0899855	0.0924262	0.806607	1	-14	DG8S308
0.391559	1.31527	90	0.0722222	689	0.0558781	0.0577664	0.734097	1	-4	DG8S308
0.710487	1.23	90	0.0222222	689	0.0181422	0.0186136	0.137791	1	4	DG8S308
0.175154	0.418852	90	0.0111111	689	0.0261248	0.0243902	1.83827	1	-6	DG8S308
0.340146	0.422097	90	0.00555554	689	0.0130624	0.0121951	0.909881	1	-2	DG8S308
0.859898	0.832488	99	0.00505051	660	0.00606061	0.00592885	0.0311539	1	8	DG8S316
0.808112	0.960815	99	0.308081	660	0.316667	0.315547	0.0589821	1	10	DG8S316
0.375005	1.14554	99	0.464646	660	0.431061	0.435441	0.787011	1	0	DG8S316
0.129566	0.664218	99	0.0757576	660	0.109848	0.105402	2.2977	1	12	DG8S316
0.867332	1.04077	99	0.116162	660	0.112121	0.112648	0.0279053	1	14	DG8S316
0.319464	1.61875	99	0.030303	660	0.0189394	0.0204216	0.99114	1	16	DG8S316
0.16135	2.63E-12	99	1.40E-14	660	0.00530303	0.00461133	1.96153	1	2	DG8S316
0.720932	1.07685	52	0.423077	606	0.405116	0.406535	0.127601	1	2	DG8S322
0.685172	0.788479	52	0.0288462	606	0.0363036	0.0357143	0.164362	1	10	DG8S322
0.268308	1.25949	52	0.423077	606	0.367987	0.37234	1.22537	1	0	DG8S322
0.0129756	0.365904	52	0.0480769	606	0.121287	0.115502	6.17244	1	4	DG8S322
0.773078	1.11905	52	0.0769231	606	0.0693069	0.0699088	0.0831461	1	6	DG8S322
0.735723	0.944798	100	0.715	700	0.726429	0.725	0.113921	1	0	DG8S323
0.735723	1.05843	100	0.285	700	0.273571	0.275	0.113921	1	5	DG8S323
0.63791	1.08125	97	0.314433	695	0.297842	0.299874	0.221486	1	0	DG8S324
0.298388	1.58857	97	0.0360825	695	0.0230216	0.0246212	1.08138	1	10	DG8S324
0.890423	0.974756	97	0.216495	695	0.220863	0.220328	0.0189804	1	8	DG8S324
0.466028	0.865511	97	0.175258	695	0.197122	0.194444	0.531379	1	2	DG8S324
0.316602	0.775253	97	0.0927836	695	0.116547	0.113636	1.00293	1	6	DG8S324
0.529445	1.15254	97	0.139175	695	0.123022	0.125	0.395457	1	4	DG8S324
0.715962	1.1993	97	0.0257732	695	0.0215827	0.022096	0.132395	1	12	DG8S324
0.321194	0.785941	93	0.107527	726	0.13292	0.130037	0.984077	1	-4	DG8S332
0.877088	0.954194	93	0.0698925	726	0.0730028	0.0726496	0.0239204	1	4	DG8S332
0.206955	0.790105	93	0.209678	726	0.251377	0.246642	1.5926	1	2	DG8S332
0.0425925	1.41167	93	0.327957	726	0.256887	0.264957	4.1115	1	0	DG8S332
0.530606	0.889209	93	0.215054	726	0.235537	0.233211	0.393231	1	-2	DG8S332
0.710218	1.16902	93	0.0376344	726	0.0323691	0.032967	0.13806	1	6	DG8S332
0.217107	1.8282	93	0.0322581	726	0.0179063	0.019536	1.52339	1	-6	DG8S332
0.0559242	0.696624	87	0.224138	539	0.293135	0.283546	3.65431	1	-5	DG8S333
0.0559242	1.43549	87	0.775862	539	0.706865	0.716454	3.65431	1	0	DG8S333
0.00198166	0.188537	8	0.25	173	0.638728	0.621547	9.56645	1	1	INVSNP
0.00198166	5.304	8	0.75	173	0.361272	0.378453	9.56645	1	2	INVSNP
0.131157	0.790449	99	0.358586	764	0.414267	0.407879	2.27876	1	1	SG08S100
0.131157	1.2651	99	0.641414	764	0.585733	0.592121	2.27876	1	2	SG08S100
0.0167769	0.677563	97	0.386598	387	0.481912	0.46281	5.71957	1	1	SG08S102
0.0167769	1.47588	97	0.613402	387	0.518088	0.53719	5.71957	1	2	SG08S102
0.437006	0.878672	100	0.64	390	0.669231	0.663265	0.604132	1	0	SG08S112
0.437006	1.13808	100	0.36	390	0.330769	0.336735	0.604132	1	2	SG08S112
0.377735	0.874364	99	0.520202	700	0.553571	0.549437	0.778059	1	0	SG08S120
0.377735	1.14369	99	0.479798	700	0.446429	0.450563	0.778059	1	2	SG08S120
0.190291	0.801929	98	0.69898	746	0.743298	0.738152	1.71536	1	0	SG08S138
0.190291	1.24699	98	0.30102	746	0.256702	0.261848	1.71536	1	2	SG08S138
0.00149864	0.471507	59	0.720339	391	0.845269	0.828889	10.0803	1	1	SG08S139
0.00149864	2.12086	59	0.279661	391	0.154731	0.171111	10.0803	1	0	SG08S139
0.144357	0.800952	99	0.510101	713	0.565217	0.558498	2.13089	1	0	SG08S15
0.144357	1.24851	99	0.489899	713	0.434783	0.441502	2.13089	1	2	SG08S15
0.157518	1.23964	99	0.50505	701	0.451498	0.458125	1.9979	1	0	SG08S26
0.157518	0.806684	99	0.494949	701	0.548502	0.541875	1.9979	1	2	SG08S26
0.133952	1.26805	100	0.505	397	0.445844	0.457746	2.2461	1	2	SG08S27
0.133952	0.788614	100	0.495	397	0.554156	0.542254	2.2461	1	1	SG08S27
0.141165	0.787135	97	0.561856	397	0.619647	0.6083	2.16521	1	1	SG08S32

FIG. 6K. Allelic Association for Bipolar Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.141165	1.27043	97	0.438144	397	0.380353	0.3917	2.16521	1	0	SG08S32
0.145676	1.25902	99	0.646465	618	0.592233	0.599721	2.11696	1	1	SG08S35
0.145676	0.794271	99	0.353535	618	0.407767	0.400279	2.11696	1	2	SG08S35
0.212203	0.824463	100	0.45	523	0.498088	0.490369	1.55634	1	1	SG08S39
0.212203	1.21291	100	0.55	523	0.501912	0.509631	1.55634	1	0	SG08S39
0.648445	1.07374	98	0.403061	689	0.386067	0.388183	0.207867	1	0	SG08S42
0.648445	0.931322	98	0.596939	689	0.613933	0.611817	0.207867	1	2	SG08S42
0.305752	1.27727	99	0.126263	610	0.101639	0.105078	1.04894	1	1	SG08S46
0.305752	0.782919	99	0.873737	610	0.898361	0.894922	1.04894	1	3	SG08S46
0.0276381	0.711727	96	0.520833	743	0.604307	0.594756	4.8505	1	0	SG08S5
0.0276381	1.40503	96	0.479167	743	0.395693	0.405244	4.8505	1	2	SG08S5
0.684951	1.06429	98	0.454082	685	0.438686	0.440613	0.164606	1	2	SG08S50
0.684951	0.939598	98	0.545918	685	0.561314	0.559387	0.164606	1	0	SG08S50
0.00650408	0.643485	96	0.4375	381	0.547244	0.525157	7.40506	1	0	SG08S506
0.00650408	1.55404	96	0.5625	381	0.452756	0.474843	7.40506	1	2	SG08S506
0.228808	0.816667	99	0.318182	396	0.363636	0.354545	1.44826	1	2	SG08S507
0.228808	1.22449	99	0.681818	396	0.636364	0.645455	1.44826	1	3	SG08S507
0.094402	0.759538	96	0.375	392	0.441327	0.428279	2.79766	1	1	SG08S508
0.094402	1.31659	96	0.625	392	0.558673	0.571721	2.79766	1	3	SG08S508
0.590396	1.11521	96	0.807292	371	0.789757	0.793362	0.289727	1	1	SG08S510
0.590396	0.896691	96	0.192708	371	0.210243	0.206638	0.289727	1	0	SG08S510
0.872061	0.973706	96	0.401042	362	0.407459	0.406114	0.0259341	1	1	SG08S511
0.872061	1.027	96	0.598958	362	0.592541	0.593886	0.0259341	1	3	SG08S511
0.781	1.04689	95	0.410527	388	0.399485	0.401656	0.0772928	1	2	SG08S512
0.781	0.955211	95	0.589474	388	0.600515	0.598344	0.0772928	1	1	SG08S512
0.123314	0.781544	100	0.41	392	0.470663	0.458333	2.37472	1	1	SG08S517
0.123314	1.27952	100	0.59	392	0.529337	0.541667	2.37472	1	3	SG08S517
0.0911794	1.31381	100	0.625	397	0.559194	0.572435	2.85343	1	1	SG08S520
0.0911794	0.761143	100	0.375	397	0.440806	0.427565	2.85343	1	0	SG08S520
0.789675	0.953493	98	0.719388	391	0.7289	0.726994	0.0711465	1	2	SG08S6
0.789675	1.04877	98	0.280612	391	0.2711	0.273006	0.0711465	1	0	SG08S6
0.128973	0.781948	96	0.442708	380	0.503947	0.491597	2.30483	1	1	SG08S70
0.128973	1.27886	96	0.557292	380	0.496053	0.508403	2.30483	1	3	SG08S70
0.0117352	1.47013	99	0.60101	740	0.506081	0.517282	6.35045	1	0	SG08S71
0.0117352	0.680212	99	0.39899	740	0.493919	0.482718	6.35045	1	2	SG08S71
0.0424166	0.720449	97	0.43299	378	0.51455	0.497895	4.1185	1	3	SG08S73
0.0424166	1.38802	97	0.56701	378	0.48545	0.502105	4.1185	1	1	SG08S73
0.0850867	0.758593	99	0.409091	394	0.477157	0.463489	2.96496	1	1	SG08S76
0.0850867	1.31823	99	0.590909	394	0.522843	0.536511	2.96496	1	2	SG08S76
0.391224	1.1464	99	0.545455	394	0.511421	0.518256	0.735135	1	0	SG08S90
0.391224	0.872294	99	0.454545	394	0.488579	0.481744	0.735135	1	1	SG08S90
0.168061	0.773965	101	0.777228	705	0.81844	0.813275	1.90016	1	1	SG08S93
0.168061	1.29205	101	0.222772	705	0.18156	0.186725	1.90016	1	2	SG08S93
0.159581	0.775408	91	0.28022	362	0.334254	0.3234	1.97819	1	0	SG08S94
0.159581	1.28964	91	0.71978	362	0.665746	0.6766	1.97819	1	2	SG08S94
0.0266379	1.40786	99	0.49495	586	0.41041	0.422628	4.91413	1	2	SG08S95
0.0266379	0.710299	99	0.505051	586	0.58959	0.577372	4.91413	1	3	SG08S95
0.504013	1.10942	100	0.605	613	0.579935	0.58345	0.446476	1	2	SG08S96
0.504013	0.901372	100	0.395	613	0.420065	0.41655	0.446476	1	3	SG08S96
0.892559	1.0344	100	0.9	713	0.896914	0.897294	0.0182431	1	0	SG08S97
0.892559	0.966742	100	0.1	713	0.103086	0.102706	0.0182431	1	1	SG08S97

FIG. 7A. Results for Bipolar Disorder without Panic Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.363622	0.836763	60	0.616667	811	0.65783	0.654994	0.825344	1	4	AC022239-5
0.305708	1.24469	60	0.283333	811	0.24106	0.243972	1.04913	1	0	AC022239-5
0.977998	1.0095	60	0.0833332	811	0.0826141	0.0826636	0.000760585	1	8	AC022239-5
0.512664	1.39E-10	60	2.58E-13	811	0.00184957	0.00172216	0.428626	1	-12	AC022239-5
0.69447	1.35763	60	0.0166666	811	0.0123305	0.0126292	0.154289	1	-4	AC022239-5
0.316991	1.51E-11	60	6.55E-14	811	0.00431566	0.00401837	1.00132	1	-8	AC022239-5
0.111109	1.59559	55	0.154546	574	0.102787	0.107313	2.53838	1	12	AC068974-2
0.723343	1.08063	55	0.3	574	0.283972	0.285374	0.125312	1	14	AC068974-2
0.432112	0.70124	55	0.0454546	574	0.0635889	0.0620032	0.61714	1	10	AC068974-2
0.287331	0.805706	55	0.390909	574	0.44338	0.438792	1.13208	1	0	AC068974-2
0.604326	1.26692	55	0.0545454	574	0.043554	0.0445151	0.26852	1	16	AC068974-2
0.225515	1.51E-16	55	1.06E-18	574	0.00696864	0.0063593	1.46893	1	20	AC068974-2
0.335492	0.526588	55	0.0181817	574	0.0339721	0.0325914	0.927581	1	6	AC068974-2
0.121956	4.11E-12	55	4.71E-14	574	0.011324	0.0103339	2.39201	1	8	AC068974-2
0.0378667	5.33647	55	0.0272728	574	0.00522647	0.00715421	4.311	1	18	AC068974-2
0.66874	3.17E-10	55	2.76E-13	574	0.00087108	0.000794913	0.18308	1	2	AC068974-2
0.66874	3.17E-10	55	2.76E-13	574	0.00087108	0.000794913	0.18308	1	15	AC068974-2
0.335342	3.50155	55	0.00909095	574	0.00261323	0.00317965	0.928159	1	-2	AC068974-2
0.66874	3.17E-10	55	2.76E-13	574	0.00087108	0.000794913	0.18308	1	13	AC068974-2
0.111109	1.59559	55	0.154546	574	0.102787	0.107313	2.53838	1	12	AC068974-2
0.723343	1.08063	55	0.3	574	0.283972	0.285374	0.125312	1	14	AC068974-2
0.432112	0.70124	55	0.0454546	574	0.0635889	0.0620032	0.61714	1	10	AC068974-2
0.287331	0.805706	55	0.390909	574	0.44338	0.438792	1.13208	1	0	AC068974-2
0.604326	1.26692	55	0.0545454	574	0.043554	0.0445151	0.26852	1	16	AC068974-2
0.225515	1.51E-16	55	1.06E-18	574	0.00696864	0.0063593	1.46893	1	20	AC068974-2
0.335492	0.526588	55	0.0181817	574	0.0339721	0.0325914	0.927581	1	6	AC068974-2
0.121956	4.11E-12	55	4.71E-14	574	0.011324	0.0103339	2.39201	1	8	AC068974-2
0.0378667	5.33647	55	0.0272728	574	0.00522647	0.00715421	4.311	1	18	AC068974-2
0.66874	3.17E-10	55	2.76E-13	574	0.00087108	0.000794913	0.18308	1	2	AC068974-2
0.66874	3.17E-10	55	2.76E-13	574	0.00087108	0.000794913	0.18308	1	15	AC068974-2
0.335342	3.50155	55	0.00909095	574	0.00261323	0.00317965	0.928159	1	-2	AC068974-2
0.66874	3.17E-10	55	2.76E-13	574	0.00087108	0.000794913	0.18308	1	13	AC068974-2
0.59902	1.14583	58	0.172414	780	0.153846	0.155131	0.276476	1	0	AF131215-1
0.299873	0.805799	58	0.293104	780	0.339744	0.336516	1.07476	1	2	AF131215-1
0.998415	1.00041	58	0.310345	780	0.310256	0.310263	3.94E-06	1	-2	AF131215-1
0.372986	0.552631	58	0.0172414	780	0.0307692	0.0298329	0.793693	1	22	AF131215-1
0.723982	1.18777	58	0.0431035	780	0.0365385	0.0369928	0.124709	1	10	AF131215-1
0.562829	1.45259	58	0.025862	780	0.0179487	0.0184964	0.334829	1	-4	AF131215-1
0.699929	0.821431	58	0.0344828	780	0.0416667	0.0411695	0.148546	1	8	AF131215-1
0.320657	1.45959	58	0.0775862	780	0.0544872	0.0560859	0.986266	1	4	AF131215-1
0.294411	2.04424	58	0.025862	780	0.0128205	0.0137232	1.09934	1	-6	AF131215-1
0.592101	1.18E-14	58	1.52E-17	780	0.00128205	0.00119332	0.287074	1	12	AF131215-1
0.704833	4.37E-12	58	2.80E-15	780	0.000641025	0.000596659	0.143493	1	6	AF131215-1
0.697802	0.929521	61	0.516394	780	0.534615	0.533294	0.150769	1	0	AF131215-2
0.579915	1.11131	61	0.426229	780	0.400641	0.402497	0.306372	1	4	AF131215-2
0.690189	0.844827	61	0.0491803	780	0.0576923	0.0570749	0.158881	1	8	AF131215-2
0.501289	1.79E-11	61	3.45E-14	780	0.00192308	0.00178359	0.452205	1	-8	AF131215-2
0.676324	1.60332	61	0.00819677	780	0.0051282	0.00535077	0.174294	1	-4	AF131215-2
0.478237	0.870426	58	0.396552	795	0.430189	0.427902	0.502881	1	0	AF131215-4
0.184845	1.29107	58	0.5	795	0.436478	0.440797	1.75824	1	14	AF131215-4
0.634514	0.838932	58	0.0689655	795	0.0811321	0.0803048	0.225988	1	12	AF131215-4
0.12748	0.285477	58	0.0086207	795	0.0295597	0.028136	2.32292	1	8	AF131215-4
0.407604	1.7323	58	0.025862	795	0.0150943	0.0158265	0.68578	1	16	AF131215-4
0.357529	6.82E-12	58	2.58E-14	795	0.00377359	0.003517	0.846552	1	18	AF131215-4
0.401027	1.09E-10	58	3.45E-13	795	0.00314465	0.00293083	0.705246	1	10	AF131215-4
0.70741	1.51E-13	58	9.51E-17	795	0.000628931	0.000586166	0.140878	1	4	AF131215-4
0.0963016	1.76706	57	0.105263	801	0.062422	0.0652681	2.76575	1	-6	AF188029-1
0.142988	0.734164	57	0.280702	801	0.347066	0.342657	2.14551	1	0	AF188029-1

FIG. 7B. Results for Bipolar Disorder without Panic Disorder

p-val	r	#aff	aff.fr q	#con	con.freq	H0.freq	X2	info	allele	marker
0.434288	0.590808	57	0.0175439	801	0.0293383	0.0285548	0.611329	1	-12	AF188029-1
0.832496	1.05185	57	0.210526	801	0.202247	0.202797	0.0447331	1	-4	AF188029-1
0.475623	0.83072	57	0.157895	801	0.184145	0.182401	0.508884	1	-8	AF188029-1
0.965978	1.02281	57	0.0350877	801	0.0343321	0.0343823	0.00181925	1	2	AF188029-1
0.184115	1.67473	57	0.0789474	801	0.0486891	0.0506993	1.76409	1	-10	AF188029-1
0.261327	1.43339	57	0.114035	801	0.082397	0.0844988	1.26172	1	-2	AF188029-1
0.164433	3.63E-11	57	3.20E-13	801	0.00873908	0.00815851	1.93298	1	4	AF188029-1
0.710751	3.94E-10	57	2.46E-13	801	0.000624219	0.000582751	0.137528	1	6	AF188029-1
0.621405	1.10038	58	0.448276	804	0.424751	0.426334	0.243897	1	0	AF188029-10
0.901714	0.937651	58	0.0344828	804	0.0366915	0.0365429	0.0152515	1	-2	AF188029-10
0.127551	0.736929	58	0.336207	804	0.407338	0.402552	2.32207	1	2	AF188029-10
0.778226	1.12275	58	0.0603448	804	0.0541045	0.0545244	0.0793164	1	8	AF188029-10
0.0990892	1.68676	58	0.12069	804	0.0752488	0.0783063	2.72014	1	4	AF188029-10
0.597494	1.96E-10	58	2.45E-13	804	0.00124378	0.00116009	0.278792	1	-4	AF188029-10
0.708924	1.64E-10	58	1.02E-13	804	0.000621891	0.000580046	0.139354	1	6	AF188029-10
0.579137	1.14863	56	0.196429	795	0.175472	0.176851	0.307631	1	0	AF188029-12
0.985476	1.00657	56	0.0803571	795	0.0798742	0.079906	0.000331374	1	4	AF188029-12
0.593852	0.900594	56	0.535714	795	0.561635	0.559929	0.284369	1	-12	AF188029-12
0.978505	1.0072	56	0.160714	795	0.159748	0.159812	0.00072591	1	-4	AF188029-12
0.543585	2.03734	56	0.00892862	795	0.00440251	0.00470035	0.368935	1	12	AF188029-12
0.938849	0.945455	56	0.0178571	795	0.0188679	0.0188014	0.00588534	1	8	AF188029-12
0.835837	0.961074	60	0.575	809	0.584672	0.584005	0.0429404	1	0	AF188029-7
0.691804	1.07951	60	0.408333	809	0.389988	0.391254	0.15714	1	-4	AF188029-7
0.81474	0.791399	60	0.00833334	809	0.0105068	0.0103567	0.0549035	1	2	AF188029-7
0.142015	3.24E-12	60	3.03E-14	809	0.00927071	0.00863061	2.15599	1	-2	AF188029-7
0.449054	2.42E-10	60	6.00E-13	809	0.00247219	0.0023015	0.573038	1	6	AF188029-7
0.417341	2.71092	60	0.00833333	809	0.00309024	0.00345224	0.657791	1	4	AF188029-7
0.417636	1.20832	40	0.525	449	0.477728	0.481595	0.656957	1	0	AF287957-1
0.0581369	0.622981	40	0.2875	449	0.393096	0.384458	3.58975	1	-6	AF287957-1
0.239885	0.464266	40	0.025	449	0.0523385	0.0501022	1.38127	1	-4	AF287957-1
0.149224	2.4349	40	0.05	449	0.0211581	0.0235174	2.08017	1	2	AF287957-1
0.0339226	3.45491	40	0.0625001	449	0.018931	0.0224949	4.4986	1	4	AF287957-1
0.345145	1.90477	40	0.0375001	449	0.0200445	0.0214724	0.891226	1	-2	AF287957-1
0.767846	0.745149	40	0.0125	449	0.0167038	0.0163599	0.0871392	1	-14	AF287957-1
0.368674	1.46881	61	0.0573771	867	0.0397924	0.0409483	0.808129	1	-12	D8S1130
0.16812	1.33239	61	0.303279	867	0.246251	0.25	1.89963	1	4	D8S1130
0.868403	0.963438	61	0.221312	867	0.227797	0.227371	0.0274522	1	-8	D8S1130
0.0912015	0.642196	61	0.131148	867	0.190311	0.186422	2.85304	1	0	D8S1130
0.699451	1.12656	61	0.106557	867	0.0957324	0.096444	0.149044	1	8	D8S1130
0.47914	0.825683	61	0.131148	867	0.154556	0.153017	0.500819	1	-4	D8S1130
0.941492	0.962366	61	0.0327869	867	0.0340254	0.033944	0.00538681	1	12	D8S1130
0.857508	0.834711	61	0.00819672	867	0.00980392	0.00969828	0.032237	1	16	D8S1130
0.0195481	149070	61	0.00819593	867	5.54E-08	0.000538793	5.4518	1	20	D8S1130
0.522835	1.35E-11	61	2.34E-14	867	0.0017301	0.00161638	0.408298	1	2	D8S1130
0.825877	0.954251	60	0.266667	839	0.275924	0.275306	0.0483969	1	0	D8S1469
0.704363	1.07443	60	0.483333	839	0.465435	0.46663	0.143973	1	4	D8S1469
0.450413	1.21164	60	0.175	839	0.148987	0.150723	0.569613	1	8	D8S1469
0.191474	0.538409	60	0.0333333	839	0.0601907	0.0583982	1.70624	1	3	D8S1469
0.270889	2.12565	60	0.0250001	839	0.0119189	0.012792	1.21224	1	12	D8S1469
0.211151	0.449292	60	0.0166667	839	0.0363528	0.0350389	1.56352	1	-4	D8S1469
0.599038	3.19E-12	60	3.80E-15	839	0.0011919	0.00111235	0.276449	1	7	D8S1469
0.864964	1.03499	52	0.480769	845	0.472189	0.472687	0.0289198	1	0	D8S1695
0.71935	1.15974	52	0.0673076	845	0.0585799	0.0590858	0.129116	1	10	D8S1695
0.749006	0.90158	52	0.105769	845	0.115976	0.115385	0.102369	1	4	D8S1695
0.355556	0.793651	52	0.192308	845	0.230769	0.22854	0.85353	1	8	D8S1695
0.834287	1.13769	52	0.0288462	845	0.0254438	0.025641	0.0437674	1	12	D8S1695
0.23416	1.54304	52	0.0961539	845	0.064497	0.0663322	1.41541	1	6	D8S1695
0.602845	1.81336	52	0.0096153	845	0.00532545	0.00557414	0.270726	1	14	D8S1695

FIG. 7C. Results for Bipolar Disorder without Panic Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.885143	0.900869	52	0.0192307	845	0.0213018	0.0211817	0.0208667	1	2	D8S1695
0.36004	8.49E-11	52	3.53E-13	845	0.00414201	0.0039019	0.837755	1	16	D8S1695
0.624919	5.76E-12	52	6.83E-15	845	0.00118343	0.00111483	0.239014	1	-4	D8S1695
0.729607	2.79E-14	52	1.65E-17	845	0.000591716	0.000557414	0.119473	1	9	D8S1695
0.80841	1.0553	59	0.254237	643	0.244168	0.245014	0.0587953	1	34	D8S1721
0.158461	0.409152	59	0.0169492	643	0.0404355	0.0384615	1.98885	1	36	D8S1721
0.461971	0.864658	59	0.372881	643	0.407465	0.404558	0.541116	1	0	D8S1721
0.595841	1.15963	59	0.144068	643	0.12675	0.128205	0.281315	1	2	D8S1721
0.432878	1.27283	59	0.118644	643	0.0956454	0.0975783	0.615089	1	4	D8S1721
0.0775081	2.0411	59	0.0762712	643	0.0388803	0.0420228	3.1164	1	24	D8S1721
0.467735	6.46E-11	59	1.51E-13	643	0.00233282	0.00213675	0.527321	1	30	D8S1721
0.512395	0.541025	59	0.00847456	643	0.0155521	0.0149573	0.429173	1	8	D8S1721
0.691622	0.678413	59	0.00847451	643	0.0124417	0.0121083	0.157335	1	32	D8S1721
0.348332	7.27E-11	59	2.84E-13	643	0.00388803	0.00356125	0.879525	1	26	D8S1721
0.129906	3.04E-15	59	3.10E-17	643	0.0101089	0.00925926	2.29362	1	38	D8S1721
0.675145	8.24E-11	59	6.41E-14	643	0.000777605	0.000712251	0.175643	1	6	D8S1721
0.675145	8.24E-11	59	6.41E-14	643	0.000777605	0.000712251	0.175643	1	-2	D8S1721
0.675145	8.24E-11	59	6.41E-14	643	0.000777605	0.000712251	0.175643	1	-4	D8S1721
0.0614298	0.704028	62	0.532258	866	0.617783	0.612069	3.49835	1	0	D8S1759
0.634574	1.15865	62	0.104839	866	0.0918014	0.0926724	0.225909	1	2	D8S1759
0.852221	1.07889	62	0.0564515	866	0.0525404	0.0528017	0.0347024	1	10	D8S1759
0.149653	1.46479	62	0.16129	866	0.116051	0.119073	2.07579	1	12	D8S1759
0.880877	1.11934	62	0.016129	866	0.0144342	0.0145474	0.0224573	1	8	D8S1759
0.683338	0.750997	62	0.016129	866	0.0213626	0.0210129	0.166393	1	6	D8S1759
0.225795	1.52383	62	0.0887097	866	0.0600462	0.0619612	1.46715	1	4	D8S1759
0.89257	0.871956	62	0.00806456	866	0.00923787	0.00915948	0.0182392	1	16	D8S1759
0.922244	1.07566	62	0.016129	866	0.0150115	0.0150862	0.00952714	1	14	D8S1759
0.519328	3.81E-10	62	6.62E-13	866	0.0017321	0.00161638	0.415229	1	-2	D8S1759
0.456297	1.18012	43	0.5	702	0.458689	0.461074	0.554962	1	0	D8S1825
0.24022	0.568227	43	0.0465116	702	0.0790598	0.0771812	1.3793	1	8	D8S1825
0.960318	1.01672	43	0.127907	702	0.126068	0.126174	0.00247554	1	10	D8S1825
0.316577	0.741137	43	0.151163	702	0.193732	0.191275	1.00304	1	6	D8S1825
0.361023	2.00E-14	43	1.00E-16	702	0.00498575	0.00469799	0.834332	1	-2	D8S1825
0.222186	1.48877	43	0.151163	702	0.106838	0.109396	1.49019	1	2	D8S1825
0.195893	8.13E-12	43	8.19E-14	702	0.00997151	0.00939597	1.67273	1	12	D8S1825
0.647625	1.42961	43	0.0232559	702	0.0163818	0.0167785	0.208908	1	4	D8S1825
0.440285	7.53E-12	43	2.69E-14	702	0.00356125	0.0033557	0.595538	1	-1	D8S1825
0.730184	1.47E-10	43	1.05E-13	702	0.000712251	0.000671141	0.118943	1	14	D8S1825
0.753881	1.07363	44	0.375	841	0.358502	0.359322	0.0982984	1	4	D8S265
0.317205	0.643406	44	0.0568181	841	0.0856124	0.0841808	1.00044	1	18	D8S265
0.078936	9.89E-13	44	1.80E-14	841	0.0178359	0.0169492	3.08667	1	6	D8S265
0.666891	1.17212	44	0.102273	841	0.088585	0.0892655	0.18526	1	14	D8S265
0.481601	1.22653	44	0.181818	841	0.153389	0.154802	0.495235	1	0	D8S265
0.395095	0.684796	44	0.0568181	841	0.0808561	0.079661	0.723203	1	-5	D8S265
0.897034	0.96109	44	0.147727	841	0.152794	0.152542	0.0167466	1	2	D8S265
0.172352	1.82619	44	0.0795455	841	0.0451843	0.0468927	1.86236	1	12	D8S265
0.186827	1.32E-11	44	1.35E-13	841	0.010107	0.00960452	1.74246	1	16	D8S265
0.749417	4.63E-12	44	2.76E-15	841	0.00059453	0.000564972	0.102022	1	-3	D8S265
0.579995	3.94E-11	44	7.04E-14	841	0.00178359	0.00169492	0.306242	1	10	D8S265
0.474836	1.14E-12	44	3.40E-15	841	0.00297265	0.00282486	0.5107	1	8	D8S265
0.749417	4.63E-12	44	2.76E-15	841	0.00059453	0.000564972	0.102022	1	20	D8S265
0.749417	4.63E-12	44	2.76E-15	841	0.00059453	0.000564972	0.102022	1	1	D8S265
0.749417	4.63E-12	44	2.76E-15	841	0.00059453	0.000564972	0.102022	1	-4	D8S265
0.993422	0.996403	33	0.0909091	762	0.0912073	0.091195	6.80E-05	1	0	D8S351
0.305742	1.35317	33	0.257576	762	0.204068	0.206289	1.04898	1	18	D8S351
0.430602	1.26016	33	0.257576	762	0.215879	0.21761	0.621199	1	2	D8S351
0.918456	0.964886	33	0.151515	762	0.156168	0.155975	0.0104814	1	6	D8S351
0.173787	0.31956	33	0.0151515	762	0.0459318	0.0446541	1.84997	1	20	D8S351

FIG. 7D. Results for Bipolar Disorder without Panic Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.215344	1.06E-11	33	1.26E-13	762	0.011811	0.0113208	1.53513	1	10	D8S351
0.400003	0.624339	33	0.0454545	762	0.0708661	0.0698113	0.708316	1	4	D8S351
0.603264	0.768725	33	0.060606	762	0.0774278	0.0767296	0.270101	1	8	D8S351
0.33331	3.33405	33	0.0151515	762	0.00459318	0.00503145	0.935995	1	-2	D8S351
0.634597	1.22072	33	0.106061	762	0.0885827	0.0893082	0.225878	1	16	D8S351
0.0926225	1.50E-11	33	3.32E-13	762	0.0216535	0.0207547	2.82819	1	14	D8S351
0.274837	2.84E-12	33	2.63E-14	762	0.00918635	0.00880503	1.19245	1	12	D8S351
0.56006	5.87E-14	33	1.54E-16	762	0.00262467	0.00251572	0.339601	1	22	D8S351
0.448788	0.854838	58	0.301724	825	0.335758	0.333522	0.573711	1	-6	D8S503
0.980215	1.00633	58	0.172414	825	0.171515	0.171574	0.000615032	1	-2	D8S503
0.321893	1.2189	58	0.37931	825	0.333939	0.33692	0.981241	1	0	D8S503
0.0359288	0.290408	58	0.0172414	825	0.0569697	0.0543601	4.40048	1	-4	D8S503
0.350094	1.42442	58	0.0775863	825	0.0557576	0.0571914	0.873115	1	-8	D8S503
0.26815	1.24E-11	58	6.78E-14	825	0.00545455	0.00509626	1.22619	1	4	D8S503
0.382595	1.49718	58	0.0517241	825	0.0351515	0.0362401	0.762346	1	2	D8S503
0.522981	2.30E-11	58	4.19E-14	825	0.00181818	0.00169875	0.40801	1	-10	D8S503
0.366136	1.20E-13	58	4.38E-16	825	0.00363636	0.00339751	0.816738	1	-12	D8S503
0.403745	0.855197	62	0.548387	876	0.586758	0.584222	0.697146	1	2	D8S516
0.385815	1.21411	62	0.233871	876	0.200913	0.203092	0.752091	1	4	D8S516
0.907354	1.03746	62	0.0967742	876	0.0936073	0.0938166	0.0135436	1	-2	D8S516
0.871696	0.948964	62	0.0887096	876	0.0930365	0.0927505	0.0260839	1	0	D8S516
0.00364776	14.4546	62	0.0241935	876	0.00171233	0.00319829	8.45133	1	8	D8S516
0.0751962	5.94E-18	62	7.90E-20	876	0.0131279	0.0122601	3.16579	1	6	D8S516
0.761509	0.74155	62	0.00806452	876	0.0108447	0.010661	0.092112	1	-4	D8S516
0.371238	1.19618	57	0.403509	663	0.361237	0.364583	0.799518	1	6	D8S520
0.402548	0.813844	57	0.184211	663	0.217195	0.214583	0.7007	1	8	D8S520
0.027895	4.30E-13	57	9.62E-15	663	0.0218703	0.0201389	4.83455	1	10	D8S520
0.62836	1.15818	57	0.122807	663	0.107843	0.109028	0.234292	1	0	D8S520
0.577855	0.791186	57	0.0526315	663	0.0656109	0.0645833	0.309715	1	-10	D8S520
0.353393	0.726123	57	0.0789474	663	0.105581	0.103472	0.861236	1	2	D8S520
0.0777413	1.65417	57	0.157895	663	0.10181	0.10625	3.1115	1	4	D8S520
0.222305	1.57E-11	57	1.07E-13	663	0.00678733	0.00625	1.48943	1	-12	D8S520
0.684583	2.16E-11	57	1.63E-14	663	0.000754148	0.000694444	0.165012	1	9	D8S520
0.142149	5.08E-11	57	5.03E-13	663	0.00980392	0.00902778	2.15454	1	-2	D8S520
0.565574	2.82E-12	57	4.26E-15	663	0.0015083	0.00138889	0.330144	1	12	D8S520
0.267119	0.808015	58	0.474138	840	0.527381	0.523942	1.23148	1	0	D8S542
0.0842544	1.53528	58	0.206897	840	0.145238	0.14922	2.98086	1	4	D8S542
0.893055	0.972736	58	0.318965	840	0.325	0.32461	0.018074	1	2	D8S542
0.526596	5.83E-11	58	1.04E-13	840	0.00178571	0.00167038	0.400955	1	-2	D8S542
0.714754	5.94E-12	58	3.54E-15	840	0.000595238	0.000556793	0.133575	1	-12	D8S542
0.930316	1.03056	55	0.0909091	814	0.0884521	0.0886076	0.0076471	1	-8	D8S550
0.993832	1.00236	55	0.118182	814	0.117936	0.117952	5.98E-05	1	12	D8S550
0.77785	0.894133	55	0.0636364	814	0.0706388	0.0701956	0.0795925	1	-6	D8S550
0.707978	0.920186	55	0.263636	814	0.280098	0.279056	0.140305	1	14	D8S550
0.305257	0.733118	55	0.109091	814	0.14312	0.140967	1.05109	1	-2	D8S550
0.076296	2.41396	55	0.0545453	814	0.0233415	0.0253165	3.14209	1	8	D8S550
0.719432	1.14932	55	0.0727273	814	0.0638821	0.0644419	0.129038	1	10	D8S550
0.204892	1.74582	55	0.0636362	814	0.0374693	0.0391254	1.60716	1	18	D8S550
0.900611	1.09808	55	0.0181818	814	0.0165848	0.0166858	0.0155975	1	20	D8S550
0.384808	0.716726	55	0.0636364	814	0.0866093	0.0851554	0.755287	1	16	D8S550
0.412013	1.36158	55	0.0818181	814	0.0614251	0.0627158	0.672983	1	0	D8S550
0.277346	3.77E-11	55	2.09E-13	814	0.00552826	0.00517837	1.18005	1	2	D8S550
0.469274	1.17E-12	55	2.89E-15	814	0.002457	0.0023015	0.523685	1	22	D8S550
0.608964	2.02E-13	55	2.48E-16	814	0.0012285	0.00115075	0.261687	1	6	D8S550
0.608964	2.02E-13	55	2.48E-16	814	0.0012285	0.00115075	0.261687	1	4	D8S550
0.131551	0.579512	16	0.46875	391	0.603581	0.59828	2.2741	1	1	DG00AAHBG
0.131551	1.72559	16	0.53125	391	0.396419	0.40172	2.2741	1	2	DG00AAHBG
0.285177	0.773002	41	0.646341	725	0.702759	0.699739	1.14225	1	2	DG00AAHBH

FIG. 7E. Results for Bipolar Disorder without Panic Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.285177	1.29366	41	0.353659	725	0.297241	0.300261	1.14225	1	1	DG00AAHBH
0.382271	0.806631	38	0.631579	811	0.680025	0.677856	0.763387	1	3	DG00AAHBI
0.382271	1.23972	38	0.368421	811	0.319975	0.322144	0.763387	1	1	DG00AAHBI
0.278007	1.3071	52	0.240385	531	0.194915	0.198971	1.17681	1	0	DG8S117
0.278007	0.765052	52	0.759615	531	0.805085	0.801029	1.17681	1	9	DG8S117
0.971671	0.988415	62	0.91129	826	0.912228	0.912162	0.00126118	1	0	DG8S118
0.971671	1.01172	62	0.0887096	826	0.0877724	0.0878378	0.00126118	1	5	DG8S118
0.335458	0.818662	52	0.394231	604	0.442881	0.439024	0.927712	1	0	DG8S127
0.888013	0.956222	52	0.115385	604	0.120033	0.119665	0.01983	1	6	DG8S127
0.258737	1.26033	52	0.490384	604	0.432947	0.4375	1.2755	1	1	DG8S127
0.362993	1.54E-12	52	6.38E-15	604	0.00413907	0.00381098	0.827511	1	2	DG8S127
0.847624	1.04506	56	0.758929	646	0.750774	0.751425	0.0369218	1	0	DG8S128
0.847624	0.956886	56	0.241071	646	0.249226	0.248575	0.0369218	1	4	DG8S128
0.893296	0.973154	56	0.366072	772	0.372409	0.371981	0.0179922	1	4	DG8S130
0.256885	0.800914	56	0.482143	772	0.537565	0.533816	1.28547	1	0	DG8S130
0.540972	1.63315	56	0.0178571	772	0.0110104	0.0114734	0.373742	1	-4	DG8S130
0.173265	6.94598	56	0.0089286	772	0.00129533	0.00181159	1.85446	1	12	DG8S130
0.169927	1.8395	56	0.0625	772	0.0349741	0.0368357	1.88359	1	-16	DG8S130
0.208801	1.73918	56	0.0624999	772	0.0369171	0.0386473	1.57972	1	8	DG8S130
0.358847	7.02E-11	56	2.74E-13	772	0.00388601	0.00362319	0.841924	1	-12	DG8S130
0.516655	1.44E-10	56	2.80E-13	772	0.00194301	0.00181159	0.420566	1	-8	DG8S130
0.94086	0.980424	60	0.85	739	0.852503	0.852315	0.00550408	1	0	DG8S134
0.877445	0.959107	60	0.141667	739	0.14682	0.146433	0.0237803	1	4	DG8S134
0.109039	12.4118	60	0.00833336	739	0.000676588	0.00125156	2.5681	1	2	DG8S134
1	1	57	0.657895	779	0.657895	0.657895	-9.09E-13	1	0	DG8S136
0.112226	0.373997	57	0.017544	779	0.0455712	0.0436603	2.52259	1	6	DG8S136
0.648818	1.1734	57	0.0877193	779	0.0757381	0.076555	0.207393	1	-6	DG8S136
0.605035	1.24131	57	0.0614035	779	0.0500642	0.0508373	0.267469	1	2	DG8S136
0.113172	0.4357	57	0.0263158	779	0.0584082	0.0562201	2.50935	1	4	DG8S136
0.359938	1.41477	57	0.0789473	779	0.0571245	0.0586124	0.838111	1	-4	DG8S136
0.812303	0.868891	57	0.0263158	779	0.0301669	0.0299043	0.0563853	1	-2	DG8S136
0.707013	8.09E-11	57	5.20E-14	779	0.000641848	0.000598086	0.141279	1	-10	DG8S136
0.243919	1.98701	57	0.0350877	779	0.0179718	0.0191388	1.3578	1	8	DG8S136
0.400351	7.17E-13	57	2.31E-15	779	0.00320924	0.00299043	0.707272	1	-8	DG8S136
0.594973	6.71E-12	57	8.62E-15	779	0.0012837	0.00119617	0.282645	1	10	DG8S136
0.253998	4.58704	57	0.00877195	779	0.00192554	0.00239234	1.30118	1	-14	DG8S136
0.604575	0.779604	11	0.272727	234	0.324786	0.322449	0.268151	1	-2	DG8S137
0.33397	1.95338	11	0.136363	234	0.0747863	0.077551	0.933443	1	2	DG8S137
0.291975	1.90022	11	0.181818	234	0.104701	0.108163	1.11049	1	6	DG8S137
0.90172	0.880952	11	0.0454546	234	0.0512821	0.0510204	0.0152496	1	10	DG8S137
0.631526	0.768256	11	0.181819	234	0.224359	0.222449	0.229998	1	0	DG8S137
0.960863	0.963635	11	0.090909	234	0.0940171	0.0938776	0.00240792	1	-4	DG8S137
0.398795	0.458876	11	0.0454547	234	0.0940171	0.0918367	0.711955	1	4	DG8S137
0.409548	2.73812	11	0.045455	234	0.017094	0.0183673	0.680111	1	12	DG8S137
0.543528	7.21E-11	11	6.21E-13	234	0.00854701	0.00816327	0.36904	1	8	DG8S137
0.761687	2.17E-10	11	4.64E-13	234	0.00213675	0.00204082	0.0919703	1	14	DG8S137
0.667845	3.71E-10	11	1.59E-12	234	0.00427351	0.00408163	0.184133	1	18	DG8S137
0.366532	0.7517	55	0.0999999	761	0.128778	0.126838	0.815387	1	-1	DG8S138
0.356408	1.33812	55	0.9	761	0.870565	0.872549	0.850512	1	0	DG8S138
0.708673	1.75E-12	55	1.15E-15	761	0.00065703	0.000612745	0.139606	1	1	DG8S138
0.887346	1.03081	49	0.408163	585	0.400855	0.40142	0.0200685	1	0	DG8S147
0.900469	0.973571	49	0.591837	585	0.598291	0.597792	0.0156423	1	2	DG8S147
0.688292	4.37E-11	49	3.73E-14	585	0.000854701	0.000788644	0.16094	1	1	DG8S147
0.636615	0.830118	59	0.0593221	694	0.0706052	0.0697211	0.223196	1	-4	DG8S148
0.545287	1.13556	59	0.305085	694	0.278818	0.280876	0.365829	1	2	DG8S148
0.245471	0.761006	59	0.194915	694	0.241354	0.237716	1.34889	1	-2	DG8S148
0.633681	1.09821	59	0.398305	694	0.376081	0.377822	0.227103	1	0	DG8S148
0.89712	1.07176	59	0.0338982	694	0.0317003	0.0318725	0.0167185	1	4	DG8S148

FIG. 7F. Results for Bipolar Disorder without Panic Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.0239166	109517	59	0.00847366	694	7.80E-08	0.000664011	5.10067	1	6	DG8S148
0.567669	1.72E-10	59	2.48E-13	694	0.00144092	0.00132802	0.326599	1	-17	DG8S148
0.263405	1.34158	31	0.5	473	0.427061	0.431548	1.25077	1	-2	DG8S153
0.857201	0.928867	31	0.112903	473	0.120507	0.12004	0.0323776	1	0	DG8S153
0.165944	1.45E-15	31	2.34E-17	473	0.0158562	0.014881	1.91921	1	-6	DG8S153
0.332639	0.666577	31	0.0967743	473	0.138478	0.135913	0.938597	1	8	DG8S153
0.960209	1.01975	31	0.129032	473	0.12685	0.126984	0.00248915	1	6	DG8S153
0.743331	0.823731	31	0.0483872	473	0.0581395	0.0575397	0.10722	1	10	DG8S153
0.99324	0.994838	31	0.0483869	473	0.0486258	0.0486111	7.18E-05	1	2	DG8S153
0.0729489	4.56E-12	31	1.24E-13	473	0.0264271	0.0248016	3.21539	1	14	DG8S153
0.410177	1.7307	31	0.0483871	473	0.0285412	0.0297619	0.678286	1	4	DG8S153
0.425003	1.20E-11	31	6.38E-14	473	0.00528541	0.00496032	0.63644	1	12	DG8S153
0.296624	3.86065	31	0.016129	473	0.00422833	0.00496032	1.08931	1	-4	DG8S153
0.735263	1.10639	27	0.333334	453	0.311258	0.3125	0.114334	1	4	DG8S155
0.488737	1.35035	27	0.12963	453	0.0993378	0.101042	0.479305	1	8	DG8S155
0.742857	0.724364	27	0.0185185	453	0.0253863	0.025	0.107632	1	14	DG8S155
0.975996	0.985593	27	0.0925924	453	0.093819	0.09375	0.000905323	1	2	DG8S155
0.304698	0.700246	27	0.185185	453	0.245033	0.241667	1.05352	1	6	DG8S155
0.684405	0.787116	27	0.0555556	453	0.0695364	0.06875	0.16521	1	10	DG8S155
0.823623	1.10598	27	0.111111	453	0.101545	0.102083	0.0496789	1	0	DG8S155
0.799212	0.832691	27	0.037037	453	0.0441501	0.04375	0.0647029	1	12	DG8S155
0.555291	3.06E-11	27	1.02E-13	453	0.00331126	0.003125	0.347924	1	-10	DG8S155
0.0775904	17.0753	27	0.0185184	453	0.00110376	0.00208333	3.11467	1	-16	DG8S155
0.73358	5.32E-10	27	5.87E-13	453	0.00110375	0.00104167	0.11585	1	-2	DG8S155
0.0775904	17.0753	27	0.0185184	453	0.00110376	0.00208333	3.11467	1	-12	DG8S155
0.555291	3.06E-11	27	1.02E-13	453	0.00331126	0.003125	0.347924	1	16	DG8S155
0.190234	1.29628	56	0.446429	777	0.383526	0.387755	1.7158	1	6	DG8S156
0.161363	0.75991	56	0.5	777	0.568211	0.563625	1.9614	1	0	DG8S156
0.810832	1.13757	56	0.0357143	777	0.0315315	0.0318127	0.0572896	1	-6	DG8S156
0.249986	4.65763	56	0.00892853	777	0.0019305	0.00240096	1.32338	1	3	DG8S156
0.58993	0.599689	56	0.0089286	777	0.0148005	0.0144058	0.290454	1	9	DG8S156
0.271315	0.652005	51	0.911765	556	0.940648	0.938221	1.21009	1	0	DG8S159
0.373416	1.47229	51	0.0686274	556	0.0476619	0.0494234	0.792264	1	-2	DG8S159
0.519798	1.69077	51	0.0196079	556	0.0116906	0.0123558	0.414294	1	2	DG8S159
0.833341	0.959682	58	0.413793	735	0.42381	0.423077	0.0442757	1	0	DG8S161
0.833341	1.04201	58	0.586207	735	0.57619	0.576923	0.0442757	1	2	DG8S161
0.904333	1.02303	60	0.475	815	0.469325	0.469714	0.0144454	1	0	DG8S163
0.904333	0.977488	60	0.525	815	0.530675	0.530286	0.0144454	1	3	DG8S163
0.368949	1.21796	48	0.375	759	0.33004	0.332714	0.807201	1	0	DG8S170
0.473152	0.8554	48	0.614583	759	0.650856	0.648699	0.514605	1	2	DG8S170
0.695445	0.684212	48	0.0104167	759	0.0151515	0.0148699	0.153254	1	-4	DG8S170
0.620301	9.85E-13	48	1.30E-15	759	0.00131752	0.00123916	0.245444	1	-19	DG8S170
0.620301	9.85E-13	48	1.30E-15	759	0.00131752	0.00123916	0.245444	1	-2	DG8S170
0.620301	9.85E-13	48	1.30E-15	759	0.00131752	0.00123916	0.245444	1	-8	DG8S170
0.114214	0.728131	57	0.359649	643	0.435459	0.429286	2.49492	1	14	DG8S177
0.909639	1.1292	57	0.00877188	643	0.00777605	0.00785714	0.0128809	1	20	DG8S177
0.387023	1.49758	57	0.0526315	643	0.0357698	0.0371429	0.748274	1	10	DG8S177
0.314179	1.2498	57	0.280702	643	0.237947	0.241429	1.01303	1	12	DG8S177
0.567176	0.817801	57	0.0789475	643	0.0948678	0.0935714	0.32743	1	18	DG8S177
0.662838	1.13278	57	0.140351	643	0.125972	0.127143	0.190095	1	16	DG8S177
0.559832	2.02E-10	57	3.15E-13	643	0.00155521	0.00142857	0.339996	1	2	DG8S177
0.453995	1.32747	57	0.0789473	643	0.0606532	0.0621429	0.560659	1	0	DG8S177
0.660657	1.09408	52	0.548077	622	0.525723	0.527448	0.192727	1	0	DG8S179
0.660657	0.914005	52	0.451923	622	0.474277	0.472552	0.192727	1	7	DG8S179
0.28668	0.784423	57	0.22807	625	0.2736	0.269795	1.13515	1	10	DG8S181
0.5118	0.861652	57	0.236842	625	0.2648	0.262463	0.430386	1	12	DG8S181
0.585288	1.19538	57	0.105263	625	0.0896	0.0909091	0.297763	1	0	DG8S181
0.249849	1.52807	57	0.0877193	625	0.0592	0.0615836	1.32415	1	14	DG8S181

FIG. 7G. Results for Bipolar Disorder without Panic Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.099905	0.561959	57	0.0701756	625	0.1184	0.11437	2.70706	1	4	DG8S181
0.170625	1.43453	57	0.18421	625	0.136	0.140029	1.87745	1	8	DG8S181
0.877448	0.911411	57	0.0263158	625	0.0288	0.0285924	0.0237791	1	18	DG8S181
0.268346	4.65E-12	57	2.62E-14	625	0.0056	0.00513196	1.22518	1	6	DG8S181
0.139686	2.48889	57	0.0350877	625	0.0144	0.016129	2.18142	1	16	DG8S181
0.0827705	5.56247	57	0.0175438	625	0.00320001	0.00439883	3.00964	1	-2	DG8S181
0.774579	1.3739	57	0.00877194	625	0.0064	0.00659824	0.0820192	1	2	DG8S181
0.154481	0.604252	44	0.875	818	0.920538	0.918213	2.02743	1	0	DG8S182
0.154481	1.65495	44	0.125	818	0.0794621	0.0817865	2.02743	1	-3	DG8S182
0.918548	1.02608	47	0.765957	641	0.76131	0.761628	0.0104576	1	0	DG8S188
0.918548	0.974583	47	0.234043	641	0.23869	0.238372	0.0104576	1	-1	DG8S188
0.500557	1.17799	37	0.594595	568	0.554577	0.557025	0.453756	1	0	DG8S192
0.330595	1.3395	37	0.216216	568	0.170775	0.173554	0.946565	1	2	DG8S192
0.0585889	2.08E-12	37	5.25E-14	568	0.0246479	0.0231405	3.57689	1	16	DG8S192
0.678379	0.808381	37	0.0540541	568	0.0660211	0.0652893	0.171956	1	4	DG8S192
0.59723	0.798803	37	0.0810811	568	0.0994718	0.0983471	0.279193	1	-2	DG8S192
0.523483	0.724957	37	0.0540541	568	0.0730634	0.0719008	0.407025	1	12	DG8S192
0.426469	5.26E-12	37	2.33E-14	568	0.00440141	0.00413223	0.63242	1	8	DG8S192
0.476998	3.49E-10	37	1.23E-12	568	0.00352113	0.00330579	0.50572	1	10	DG8S192
0.61522	2.80E-12	37	4.94E-15	568	0.00176056	0.00165289	0.252644	1	-4	DG8S192
0.61522	2.80E-12	37	4.94E-15	568	0.00176056	0.00165289	0.252644	1	14	DG8S192
0.546339	0.890507	62	0.604839	730	0.632192	0.630051	0.363916	1	0	DG8S197
0.546339	1.12296	62	0.395161	730	0.367808	0.369949	0.363916	1	1	DG8S197
0.238022	1.253	60	0.558333	677	0.502216	0.506784	1.39227	1	0	DG8S201
0.978142	0.994481	60	0.333333	677	0.334564	0.334464	0.000750696	1	4	DG8S201
0.192591	0.666736	60	0.0916667	677	0.131462	0.128223	1.69769	1	-2	DG8S201
0.317853	0.516752	60	0.0166667	677	0.0317578	0.0305292	0.99776	1	2	DG8S201
0.73154	1.17216	62	0.959677	735	0.953061	0.953576	0.117702	1	0	DG8S212
0.73154	0.853125	62	0.0403226	735	0.0469388	0.0464241	0.117702	1	2	DG8S212
0.58951	0.870115	35	0.614286	392	0.646684	0.644028	0.291109	1	4	DG8S215
0.560161	1.1622	35	0.385714	392	0.350765	0.35363	0.339425	1	0	DG8S215
0.558385	1.05E-12	35	2.68E-15	392	0.00255102	0.00234192	0.342508	1	2	DG8S215
0.0871529	1.4521	51	0.45098	292	0.361301	0.374636	2.92619	1	0	DG8S221
0.31001	1.26739	51	0.323529	292	0.273973	0.281341	1.03063	1	5	DG8S221
0.278737	0.540566	51	0.0294117	292	0.0530822	0.0495627	1.17324	1	7	DG8S221
0.295148	0.688172	51	0.0882353	292	0.123288	0.118076	1.09599	1	4	DG8S221
0.0270241	0.474096	51	0.0882353	292	0.169521	0.157434	4.88927	1	-2	DG8S221
0.740381	0.712872	51	0.00980394	292	0.0136986	0.0131195	0.109792	1	1	DG8S221
0.570284	1.42E-14	51	2.44E-17	292	0.00171233	0.00145773	0.322208	1	8	DG8S221
0.423644	2.88119	51	0.00980392	292	0.00342465	0.00437318	0.640186	1	-1	DG8S221
0.288824	1.2375	58	0.37931	726	0.330579	0.334184	1.1251	1	0	DG8S232
0.816519	0.954799	58	0.37069	726	0.381543	0.38074	0.0538355	1	2	DG8S232
0.310151	0.742327	58	0.112069	726	0.145317	0.142857	1.03003	1	-8	DG8S232
0.867702	0.942197	58	0.0775862	726	0.0819559	0.0816327	0.0277481	1	-4	DG8S232
0.207478	0.445616	58	0.0172415	726	0.0378788	0.036352	1.58894	1	4	DG8S232
0.126512	2.29086	58	0.0431034	726	0.0192837	0.0210459	2.33479	1	-2	DG8S232
0.694959	1.33E-12	58	9.19E-16	726	0.000688705	0.000637755	0.153769	1	-6	DG8S232
0.432654	3.68E-15	58	1.02E-17	726	0.00275482	0.00255102	0.615689	1	6	DG8S232
0.0894128	1.94577	62	0.951613	672	0.90997	0.913488	2.88491	1	0	DG8S238
0.0894128	0.513937	62	0.0483871	672	0.0900298	0.0865123	2.88491	1	-8	DG8S238
0.274709	0.76358	37	0.581081	476	0.644958	0.640351	1.19308	1	4	DG8S242
0.274709	1.30962	37	0.418919	476	0.355042	0.359649	1.19308	1	0	DG8S242
0.0454729	2.18298	59	0.949153	468	0.895299	0.901328	4.00101	1	0	DG8S245
0.657445	0.826128	59	0.0508475	468	0.0608974	0.0597723	0.196643	1	-4	DG8S245
0.00211384	4.43E-13	59	1.93E-14	468	0.0416667	0.0370019	9.44796	1	4	DG8S245
0.49051	2.61E-14	59	5.60E-17	468	0.00213675	0.00189753	0.475408	1	-8	DG8S245
0.53694	0.881381	52	0.538461	682	0.569648	0.567439	0.381241	1	0	DG8S249
0.446947	1.21329	52	0.211539	682	0.181085	0.183243	0.578382	1	-19	DG8S249

FIG. 7H. Results for Bipolar Disorder without Panic Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.545259	0.566061	52	0.00961538	682	0.0168622	0.0163488	0.36588	1	-17	DG8S249
0.618479	0.6209	52	0.00961543	682	0.0153959	0.0149864	0.248011	1	-21	DG8S249
0.693429	0.869599	52	0.0865384	682	0.0982405	0.0974114	0.155398	1	-2	DG8S249
0.348212	2.20916	52	0.0192308	682	0.00879765	0.00953678	0.879961	1	6	DG8S249
0.144024	1.84322	52	0.0769229	682	0.0432551	0.0456403	2.13443	1	2	DG8S249
0.0648878	3.14E-12	52	5.38E-14	682	0.0168622	0.0156676	3.40783	1	-6	DG8S249
0.11288	1.22E-11	52	1.54E-13	682	0.0124633	0.0115804	2.51343	1	4	DG8S249
0.309862	3.95E-12	52	2.04E-14	682	0.00513196	0.00476839	1.03126	1	-1	DG8S249
0.413523	1.51515	52	0.0480769	682	0.0322581	0.0333787	0.668649	1	-4	DG8S249
0.19623	1.62032	61	0.0819673	584	0.052226	0.0550388	1.67021	1	-10	DG8S250
0.574063	0.880554	61	0.221311	584	0.244007	0.24186	0.315932	1	-4	DG8S250
0.296023	1.32061	61	0.163934	584	0.129281	0.132558	1.09203	1	2	DG8S250
0.412746	1.2111	61	0.221311	584	0.190068	0.193023	0.670878	1	4	DG8S250
0.0459515	0.620924	61	0.172131	584	0.250856	0.243411	3.98337	1	0	DG8S250
0.689122	1.16071	61	0.0737705	584	0.0642123	0.0651163	0.160038	1	-2	DG8S250
0.138411	2.45E-13	61	2.33E-15	584	0.00941781	0.00852713	2.19554	1	8	DG8S250
0.178086	2.65164	61	0.0245902	584	0.00941781	0.0108527	1.81352	1	-8	DG8S250
0.796756	0.829713	61	0.0163935	584	0.0196918	0.0193798	0.0663309	1	6	DG8S250
0.64033	0.635261	61	0.00819671	584	0.0128425	0.0124031	0.218311	1	-12	DG8S250
0.874558	1.12843	61	0.0163934	584	0.0145548	0.0147287	0.0249236	1	-6	DG8S250
0.372264	3.74E-12	61	1.28E-14	584	0.00342466	0.00310078	0.796093	1	12	DG8S250
0.725989	1.07153	61	0.647541	680	0.631618	0.632928	0.122826	1	0	DG8S257
0.819751	0.954377	61	0.303279	680	0.313235	0.312416	0.0519225	1	-2	DG8S257
0.270525	0.546218	61	0.0245901	680	0.0441177	0.0425101	1.21408	1	-6	DG8S257
0.558965	1.6024	61	0.0163936	680	0.0102941	0.0107962	0.341499	1	2	DG8S257
0.121356	11.2314	61	0.00819671	680	0.000735295	0.00134953	2.39973	1	-9	DG8S257
0.639807	1.12067	55	0.218182	637	0.199372	0.200867	0.218995	1	15	DG8S258
0.319529	1.22222	55	0.6	637	0.55102	0.554913	0.990872	1	18	DG8S258
0.076313	0.624114	55	0.145455	637	0.214286	0.208815	3.14173	1	12	DG8S258
0.102499	1.10E-11	55	1.40E-13	637	0.0125589	0.0115607	2.66622	1	0	DG8S258
0.564768	3.16E-15	55	4.98E-18	637	0.00156986	0.00144509	0.331515	1	33	DG8S258
0.564768	3.16E-15	55	4.98E-18	637	0.00156986	0.00144509	0.331515	1	24	DG8S258
0.601723	1.40074	55	0.0272727	637	0.0196232	0.0202312	0.272405	1	21	DG8S258
0.0243049	143973	55	0.00909017	637	6.37E-08	0.000722543	5.07274	1	11	DG8S258
0.421668	0.8133	37	0.662162	549	0.706739	0.703925	0.645661	1	2	DG8S261
0.421668	1.22956	37	0.337838	549	0.29326	0.296075	0.645661	1	0	DG8S261
0.685216	0.75139	37	0.0270271	561	0.0356506	0.0351171	0.164313	1	-4	DG8S262
0.790829	0.93827	37	0.513513	561	0.529412	0.528428	0.0703492	1	0	DG8S262
0.832714	1.09169	37	0.0945949	561	0.087344	0.0877926	0.0446145	1	-10	DG8S262
0.646493	1.13866	37	0.243243	561	0.220143	0.221572	0.21035	1	2	DG8S262
0.65731	0.732383	37	0.027027	561	0.0365419	0.0359532	0.196808	1	-2	DG8S262
0.835834	1.10586	37	0.0675677	561	0.0614973	0.0618729	0.0429424	1	4	DG8S262
0.509432	1.70371	37	0.0270271	561	0.0160428	0.0167224	0.435233	1	6	DG8S262
0.474342	5.07E-11	37	1.81E-13	561	0.00356506	0.00334448	0.511843	1	8	DG8S262
0.234749	2.33E-11	37	2.30E-13	561	0.00980392	0.00919732	1.41185	1	-14	DG8S262
0.320699	1.25582	60	0.233333	751	0.195073	0.197904	0.986093	1	15	DG8S265
0.855426	0.965833	60	0.55	751	0.558589	0.557953	0.0331966	1	18	DG8S265
0.0864804	6.77E-12	60	8.67E-14	751	0.0126498	0.0117139	2.9387	1	0	DG8S265
0.48687	0.845934	60	0.183333	751	0.20972	0.207768	0.483436	1	12	DG8S265
0.579128	3.48E-12	60	4.64E-15	751	0.00133156	0.00123305	0.307647	1	33	DG8S265
0.600177	1.40076	60	0.025	751	0.017976	0.0184957	0.274729	1	21	DG8S265
0.612115	1.79472	60	0.00833334	751	0.00466045	0.00493218	0.257106	1	-6	DG8S265
0.758941	0.938379	51	0.441177	615	0.456911	0.455706	0.0941703	1	-2	DG8S266
0.375468	1.20102	51	0.480392	615	0.434959	0.438438	0.785488	1	0	DG8S266
0.330063	0.701968	51	0.0784314	615	0.10813	0.105856	0.948651	1	-4	DG8S266
0.862197	0.966728	60	0.383333	741	0.391363	0.390762	0.0301294	1	-4	DG8S269
0.509776	0.881533	60	0.55	741	0.580972	0.578652	0.434526	1	0	DG8S269
0.0357162	2.51045	60	0.0666665	741	0.0276653	0.0305868	4.41061	1	-5	DG8S269

FIG. 7I. Results for Bipolar Disord r without Panic Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.173805	0.672634	33	0.227273	567	0.304233	0.3	1.84982	1	-2	DG8S271
0.217974	1.38912	33	0.681818	567	0.606702	0.610833	1.51766	1	0	DG8S271
0.430147	0.674487	33	0.0606061	567	0.0873016	0.0858333	0.622426	1	2	DG8S271
0.0118431	17.6876	33	0.0303031	567	0.00176367	0.00333333	6.3342	1	4	DG8S271
0.912134	0.89298	58	0.00862072	674	0.00964391	0.00956284	0.0121764	1	-6	DG8S277
0.94707	1.01449	58	0.275862	674	0.272997	0.273224	0.00440712	1	10	DG8S277
0.0560169	1.47874	58	0.37069	674	0.284866	0.291667	3.65156	1	0	DG8S277
0.730644	1.12844	58	0.0862067	674	0.0771513	0.0778689	0.118521	1	-2	DG8S277
0.0751519	0.647866	58	0.172414	674	0.243323	0.237705	3.16675	1	2	DG8S277
0.289543	0.597743	58	0.0344827	674	0.0563798	0.0546448	1.12175	1	8	DG8S277
0.940706	1.05742	58	0.0172414	674	0.0163205	0.0163934	0.00553268	1	4	DG8S277
0.363148	4.45E-11	58	1.66E-13	674	0.0037092	0.0034153	0.826977	1	14	DG8S277
0.254078	2.21016	58	0.0258619	674	0.0118694	0.0129781	1.30074	1	6	DG8S277
0.45351	0.500945	58	0.0086207	674	0.0170623	0.0163934	0.561863	1	12	DG8S277
0.22211	1.36E-13	58	9.13E-16	674	0.00667656	0.00614754	1.49069	1	-4	DG8S277
0.504084	1.15686	48	0.625	576	0.590278	0.592949	0.446328	1	0	DG8S285
0.395359	0.820477	48	0.28125	576	0.322917	0.319712	0.722397	1	2	DG8S285
0.664895	1.18625	48	0.0833334	576	0.0711805	0.0721154	0.187632	1	1	DG8S285
0.6726	0.663154	48	0.0104166	576	0.015625	0.0152244	0.178576	1	-1	DG8S285
0.356563	0.835858	61	0.565574	500	0.609	0.604278	0.849961	1	0	DG8S291
0.91169	0.975087	61	0.229508	500	0.234	0.233512	0.0123005	1	4	DG8S291
0.0162732	1.91592	61	0.180328	500	0.103	0.111408	5.77312	1	2	DG8S291
0.104377	0.36212	61	0.0163934	500	0.044	0.0409982	2.63735	1	-2	DG8S291
0.844816	0.818186	61	0.00819676	500	0.01	0.00980392	0.038313	1	6	DG8S291
0.83931	0.953758	47	0.702128	729	0.711934	0.71134	0.0411182	1	2	DG8S292
0.83931	1.04849	47	0.297872	729	0.288066	0.28866	0.0411182	1	0	DG8S292
0.403875	0.81926	54	0.212963	727	0.248281	0.245839	0.696758	1	12	DG8S297
0.167267	1.32613	54	0.416667	727	0.350069	0.354673	1.90727	1	0	DG8S297
0.203843	0.504031	54	0.0277779	727	0.0536451	0.0518566	1.61463	1	14	DG8S297
0.564603	0.836642	54	0.111111	727	0.129986	0.128681	0.331796	1	4	DG8S297
0.530464	0.650253	54	0.0185185	727	0.0281981	0.0275288	0.393502	1	10	DG8S297
0.43227	1.25473	54	0.148148	727	0.121733	0.12356	0.616716	1	16	DG8S297
0.0683897	1.50E-11	54	2.41E-13	727	0.0158184	0.0147247	3.32125	1	8	DG8S297
0.561417	1.4551	54	0.0277778	727	0.0192572	0.0198464	0.337257	1	18	DG8S297
0.0491363	4.5873	54	0.0277778	727	0.00618982	0.00768246	3.87069	1	-4	DG8S297
0.389089	0.459234	54	0.00925929	727	0.019945	0.0192061	0.741788	1	6	DG8S297
0.704978	2.41E-11	54	1.66E-14	727	0.000687757	0.000640205	0.143345	1	2	DG8S297
0.255396	2.69E-11	54	1.68E-13	727	0.00618982	0.00576184	1.29354	1	-2	DG8S297
0.501664	0.852277	60	0.791667	726	0.816804	0.814885	0.451414	1	0	DG8S298
0.48337	1.18478	60	0.2	726	0.174242	0.176209	0.49125	1	2	DG8S298
0.94407	0.930186	60	0.00833332	726	0.00895317	0.00890585	0.0049217	1	1	DG8S298
0.446864	1.21504	60	0.841667	602	0.813953	0.816465	0.578595	1	0	DG8S301
0.446864	0.82302	60	0.158333	602	0.186047	0.183535	0.578595	1	1	DG8S301
0.756783	0.938942	59	0.330508	666	0.344595	0.343448	0.0959195	1	26	DG8S302
0.798986	1.05355	59	0.330509	666	0.319069	0.32	0.0648514	1	28	DG8S302
0.676336	0.881765	59	0.110169	666	0.123123	0.122069	0.17428	1	24	DG8S302
0.354682	1.42403	59	0.0762711	666	0.0548048	0.0565517	0.856634	1	30	DG8S302
0.866434	0.956303	59	0.152542	666	0.158408	0.157931	0.0282879	1	0	DG8S302
0.716308	1.09245	50	0.77	756	0.753968	0.754963	0.132057	1	2	DG8S303
0.511442	2.1717	50	0.00999994	756	0.00462963	0.00496278	0.431115	1	4	DG8S303
0.634817	0.889546	50	0.22	756	0.240741	0.239454	0.225585	1	-2	DG8S303
0.720383	2.14E-12	50	1.42E-15	756	0.000661376	0.000620347	0.128126	1	0	DG8S303
0.527856	0.825112	27	0.666667	315	0.707936	0.704678	0.398517	1	4	DG8S307
0.403115	1.35581	27	0.203704	315	0.15873	0.162281	0.699016	1	0	DG8S307
0.631224	1.36652	27	0.0555557	315	0.0412698	0.0423977	0.230404	1	8	DG8S307
0.649847	0.788966	27	0.0740741	315	0.0920635	0.0906433	0.206094	1	-4	DG8S307
0.230715	0.785129	55	0.572727	689	0.630624	0.626344	1.43645	1	0	DG8S308
0.859933	1.0476	55	0.172727	689	0.166183	0.166667	0.0311381	1	2	DG8S308

FIG. 7J. Results for Bipolar Disorder without Panic Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.342117	1.35534	55	0.118182	689	0.0899855	0.0920699	0.902483	1	-14	DG8S308
0.158839	1.68961	55	0.0909091	689	0.0558781	0.0584677	1.98525	1	-4	DG8S308
0.229603	2.04227	55	0.0363637	689	0.0181422	0.0194892	1.44332	1	4	DG8S308
0.20954	0.341997	55	0.00909089	689	0.0261248	0.0248656	1.5746	1	-6	DG8S308
0.09531	1.16E-15	55	1.53E-17	689	0.0130624	0.0120968	2.78232	1	-2	DG8S308
0.233649	2.20E-12	61	1.34E-14	660	0.0060606	0.00554785	1.41851	1	8	DG8S316
0.90597	0.97619	61	0.311475	660	0.316667	0.316227	0.0139532	1	10	DG8S316
0.917848	0.980467	61	0.42623	660	0.431061	0.430652	0.0106387	1	0	DG8S316
0.492863	0.803044	61	0.0901639	660	0.109848	0.108183	0.47027	1	12	DG8S316
0.378811	1.28211	61	0.139344	660	0.112121	0.114424	0.774558	1	14	DG8S316
0.334599	1.75593	61	0.0327868	660	0.0189394	0.020111	0.931016	1	16	DG8S316
0.265328	3.41E-11	61	1.82E-13	660	0.00530303	0.00485437	1.24074	1	2	DG8S316
0.427873	0.807637	31	0.354839	606	0.405116	0.402669	0.628589	1	2	DG8S322
0.637181	1.34977	31	0.048387	606	0.0363036	0.0368917	0.222449	1	10	DG8S322
0.188944	1.4144	31	0.451613	606	0.367987	0.372057	1.72584	1	0	DG8S322
0.145344	0.499649	31	0.0645162	606	0.121287	0.118524	2.12045	1	4	DG8S322
0.738106	1.17794	31	0.0806451	606	0.0693069	0.0698587	0.111799	1	6	DG8S322
0.858146	1.0385	62	0.733871	700	0.726429	0.727034	0.0319461	1	0	DG8S323
0.858146	0.96293	62	0.266129	700	0.273571	0.272966	0.0319461	1	5	DG8S323
0.737494	0.93203	60	0.283333	695	0.297842	0.296689	0.112342	1	0	DG8S324
0.891325	1.08814	60	0.025	695	0.0230216	0.0231788	0.018667	1	10	DG8S324
0.451315	0.836462	60	0.191667	695	0.220863	0.218543	0.567348	1	8	DG8S324
0.610258	1.12657	60	0.216667	695	0.197122	0.198675	0.259799	1	2	DG8S324
0.784209	1.08289	60	0.125	695	0.116547	0.117219	0.0749874	1	6	DG8S324
0.949648	1.01838	60	0.125	695	0.123022	0.123179	0.00398783	1	4	DG8S324
0.433781	1.56322	60	0.0333333	695	0.0215827	0.0225166	0.612678	1	12	DG8S324
0.424208	0.782798	56	0.107143	726	0.13292	0.131074	0.638627	1	-4	DG8S332
0.776646	1.10954	56	0.0803571	726	0.0730028	0.0735294	0.0804817	1	4	DG8S332
0.374309	0.812204	56	0.214286	726	0.251377	0.248721	0.789309	1	2	DG8S332
0.285306	1.26095	56	0.303571	726	0.256887	0.26023	1.14164	1	0	DG8S332
0.605396	0.885167	56	0.214286	726	0.235537	0.234015	0.266934	1	-2	DG8S332
0.504794	1.3969	56	0.0446429	726	0.0323691	0.0332481	0.444843	1	6	DG8S332
0.231896	2.03133	56	0.0357142	726	0.0179063	0.0191816	1.4292	1	-6	DG8S332
0.542218	0.868101	51	0.264706	539	0.293135	0.290678	0.371444	1	-5	DG8S333
0.542218	1.15194	51	0.735294	539	0.706865	0.709322	0.371444	1	0	DG8S333
1	1	0	0.638728	173	0.638728	0.638728	0	1	1	INVSNP
1	1	0	0.361272	173	0.361272	0.361272	0	1	2	INVSNP
0.178207	0.769592	61	0.352459	764	0.414267	0.409697	1.81251	1	1	SG08S100
0.178207	1.29939	61	0.647541	764	0.585733	0.590303	1.81251	1	2	SG08S100
0.0845721	0.706471	58	0.396551	387	0.481912	0.470787	2.97477	1	1	SG08S102
0.0845721	1.41548	58	0.603448	387	0.518088	0.529213	2.97477	1	2	SG08S102
0.637875	0.908047	61	0.647541	390	0.669231	0.666297	0.221532	1	0	SG08S112
0.637875	1.10127	61	0.352459	390	0.330769	0.333703	0.221532	1	2	SG08S112
0.527988	1.12903	60	0.583333	700	0.553571	0.555921	0.398263	1	0	SG08S120
0.527988	0.885714	60	0.416667	700	0.446429	0.444079	0.398263	1	2	SG08S120
0.405963	0.838721	60	0.708333	746	0.743298	0.740695	0.690592	1	0	SG08S138
0.405963	1.19229	60	0.291667	746	0.256702	0.259305	0.690592	1	2	SG08S138
0.64107	0.854262	34	0.82353	391	0.845269	0.843529	0.217346	1	1	SG08S139
0.64107	1.1706	34	0.176471	391	0.154731	0.156471	0.217346	1	0	SG08S139
0.866941	0.968661	61	0.557377	713	0.565217	0.564599	0.0280712	1	0	SG08S15
0.866941	1.03235	61	0.442623	713	0.434783	0.435401	0.0280712	1	2	SG08S15
0.168402	1.29721	61	0.516394	701	0.451498	0.456693	1.89711	1	0	SG08S26
0.168402	0.770884	61	0.483607	701	0.548502	0.543307	1.89711	1	2	SG08S26
0.145968	1.3272	61	0.516393	397	0.445844	0.45524	2.11388	1	2	SG08S27
0.145968	0.753463	61	0.483607	397	0.554156	0.54476	2.11388	1	1	SG08S27
0.223599	0.782321	58	0.560345	397	0.619647	0.612088	1.48112	1	1	SG08S32
0.223599	1.27825	58	0.439655	397	0.380353	0.387912	1.48112	1	0	SG08S32
0.308774	1.22057	61	0.639344	618	0.592233	0.596465	1.03591	1	1	SG08S35

FIG. 7K. Results for Bipolar Disorder without Panic Disorder

p-val	r	#aff	aff.freq	#con	con.freq	H0.freq	X2	info	allele	marker
0.308774	0.819292	61	0.360656	618	0.407767	0.403535	1.03591	1	2	SG08S35
0.518451	0.883656	61	0.467213	523	0.498088	0.494863	0.416973	1	1	SG08S39
0.518451	1.13166	61	0.532787	523	0.501912	0.505137	0.416973	1	0	SG08S39
0.533866	1.12929	59	0.415254	689	0.386067	0.388369	0.387027	1	0	SG08S42
0.533866	0.885511	59	0.584746	689	0.613933	0.611631	0.387027	1	2	SG08S42
0.654111	1.14576	61	0.114754	610	0.101639	0.102832	0.200756	1	1	SG08S46
0.654111	0.872787	61	0.885246	610	0.898361	0.897168	0.200756	1	3	SG08S46
0.189	0.776046	59	0.542373	743	0.604307	0.599751	1.72539	1	0	SG08S5
0.189	1.28858	59	0.457627	743	0.395693	0.400249	1.72539	1	2	SG08S5
0.565554	1.11705	59	0.466102	685	0.438686	0.44086	0.330178	1	2	SG08S50
0.565554	0.895211	59	0.533898	685	0.561314	0.55914	0.330178	1	0	SG08S50
0.069287	0.693897	57	0.456141	381	0.547244	0.535388	3.29983	1	0	SG08S506
0.069287	1.44114	57	0.54386	381	0.452756	0.464612	3.29983	1	2	SG08S506
0.16987	0.75	60	0.3	396	0.363636	0.355263	1.88409	1	2	SG08S507
0.16987	1.33333	60	0.7	396	0.636364	0.644737	1.88409	1	3	SG08S507
0.276852	0.802329	58	0.387931	392	0.441326	0.434444	1.18248	1	1	SG08S508
0.276852	1.24637	58	0.612069	392	0.558674	0.565556	1.18248	1	3	SG08S508
0.463684	1.20429	58	0.818965	371	0.789757	0.793706	0.536987	1	1	SG08S510
0.463684	0.830365	58	0.181035	371	0.210243	0.206294	0.536987	1	0	SG08S510
0.897524	1.02652	58	0.413793	362	0.407459	0.408333	0.0165867	1	1	SG08S511
0.897524	0.974165	58	0.586207	362	0.592541	0.591667	0.0165867	1	3	SG08S511
0.538636	1.1332	57	0.429825	388	0.399484	0.403371	0.378074	1	2	SG08S512
0.538636	0.882455	57	0.570175	388	0.600516	0.596629	0.378074	1	1	SG08S512
0.276978	0.807854	61	0.418032	392	0.470663	0.463576	1.18186	1	1	SG08S517
0.276978	1.23785	61	0.581967	392	0.529337	0.536424	1.18186	1	3	SG08S517
0.246826	1.25791	61	0.614754	397	0.559194	0.566594	1.34118	1	1	SG08S520
0.246826	0.794971	61	0.385246	397	0.440806	0.433406	1.34118	1	0	SG08S520
0.998424	0.999561	59	0.728813	391	0.7289	0.728889	3.90E-06	1	2	SG08S6
0.998424	1.00044	59	0.271187	391	0.2711	0.271111	3.90E-06	1	0	SG08S6
0.200406	0.775536	59	0.440678	380	0.503947	0.495444	1.63941	1	1	SG08S70
0.200406	1.28943	59	0.559322	380	0.496053	0.504556	1.63941	1	3	SG08S70
0.0732312	1.40539	61	0.590164	740	0.506081	0.512484	3.20907	1	0	SG08S71
0.0732312	0.711544	61	0.409836	740	0.493919	0.487516	3.20907	1	2	SG08S71
0.252356	0.7983	60	0.458333	378	0.51455	0.506849	1.31021	1	3	SG08S73
0.252356	1.25266	60	0.541667	378	0.48545	0.493151	1.31021	1	1	SG08S73
0.830216	0.958777	60	0.466667	394	0.477157	0.475771	0.0459779	1	1	SG08S76
0.830216	1.043	60	0.533333	394	0.522843	0.524229	0.0459779	1	2	SG08S76
0.781553	1.0559	60	0.525	394	0.511421	0.513216	0.0768933	1	0	SG08S90
0.781553	0.947063	60	0.475	394	0.488579	0.486784	0.0768933	1	1	SG08S90
0.234935	0.760584	62	0.774194	705	0.81844	0.814863	1.41073	1	1	SG08S93
0.234935	1.31478	62	0.225806	705	0.18156	0.185137	1.41073	1	2	SG08S93
0.402568	0.83199	56	0.294643	362	0.334254	0.328947	0.700643	1	0	SG08S94
0.402568	1.20194	56	0.705357	362	0.665746	0.671053	0.700643	1	2	SG08S94
0.124832	1.34391	60	0.483333	586	0.41041	0.417183	2.35562	1	2	SG08S95
0.124832	0.744099	60	0.516667	586	0.58959	0.582817	2.35562	1	3	SG08S95
0.965393	1.00838	61	0.581967	613	0.579935	0.580119	0.00188245	1	2	SG08S96
0.965393	0.991686	61	0.418033	613	0.420065	0.419881	0.00188245	1	3	SG08S96
0.500983	0.81986	61	0.877049	713	0.896914	0.895349	0.452853	1	0	SG08S97
0.500983	1.21972	61	0.122951	713	0.103086	0.104651	0.452853	1	1	SG08S97

Chrs	Marker	Position in bases according to Build 33
C08	AF287957-1	6609501
C08	DG8S285	6717625
C08	DG8S316	7996504
C08	DG8S201	8078430
C08	DG8S307	8079177
C08	DG8S332	8133961
C08	DG8S322	8166275
C08	DG8S324	8238280
C08	DG8S258	8335265
C08	DG8S265	8335265
C08	DG8S303	8377219
C08	DG8S269	8547384
C08	DG8S232	8602797
C08	DG8S249	8612390
C08	DG8S298	8623920
C08	D8S351	8647934
C08	D8S1825	8795901
C08	SG08S138	8799779
C08	SG08S6	8801073
C08	DG00AAHBI	8889014
C08	D8S1469	8960671
C08	DG00AAHBH	9035511
C08	D8S503	9104198
C08	DG00AAHBG	9132391
C08	DG8S277	9205638
C08	DG8S297	9226230
C08	D8S516	9280975
C08	DG8S177	9315167
C08	DG8S137	9503869
C08	DG8S182	9516392
C08	DG8S262	9560368
C08	DG8S136	9647411
C08	DG8S179	9697364
C08	DG8S134	9774278
C08	SG08S93	9794410
C08	SG08S112	9804270
C08	DG8S138	9815189
C08	SG08S15	9851027
C08	DG8S128	9943010
C08	SG08S100	9961132
C08	SG08S39	9971559
C08	D8S1721	10011582
C08	D8S542	10028442
C08	DG8S302	10062565
C08	DG8S257	10128880
C08	SG08S120	10154461
C08	DG8S266	10161672
C08	DG8S238	10223621
C08	DG8S323	10259523
C08	DG8S155	10297139
C08	DG8S291	10313503
C08	D8S520	10427394
C08	SG08S506	10492671
C08	SG08S42	10574489

FIG. 8A

C08	SG08S50	10587063
C08	DG8S148	10609020
C08	DG8S271	10624569
C08	DG8S197	10625200
C08	DG8S215	10641313
C08	DG8S159	10704990
C08	DG8S212	10726663
C08	D8S550	10752550
C08	SG08S94	10763565
C08	SG08S95	10810525
C08	SG08S96	10829574
C08	SG08S5	10857894
C08	SG08S102	10865779
C08	AF131215-1	10872575
C08	SG08S507	10881766
C08	SG08S70	10881783
C08	AF131215-2	10885941
C08	SG08S71	10887924
C08	SG08S517	10893214
C08	AF131215-4	10912771
C08	SG08S508	10914173
C08	SG08S73	10914271
C08	DG8S118	10923128
C08	DG8S161	10925492
C08	DG8S127	10926764
C08	SG08S520	10931667
C08	DG8S153	10938731
C08	SG08S510	10990033
C08	DG8S242	11023805
C08	SG08S90	11028406
C08	SG08S32	11048161
C08	DG8S156	11054915
C08	DG8S147	11071336
C08	SG08S511	11077298
C08	SG08S512	11077399
C08	SG08S27	11086652
C08	SG08S26	11090369
C08	D8S265	11150773
C08	D8S1695	11220756
C08	SG08S46	11234300
C08	DG8S130	11239181
C08	SG08S35	11253693
C08	SG08S139	11282021
C08	DG8S170	11287781
C08	DG8S261	11303006
C08	D8S1759	11348674
C08	DG8S117	11350993
C08	AC022239-5	11355629
C08	DG8S181	11390001
C08	SG08S97	11410417
C08	DG8S163	11458431
C08	DG8S221	11473774
C08	SG08S76	11477186
C08	DG8S292	11509365
C08	DG8S333	11607597
C08	D8S1130	11704969

FIG. 8B

C08	AC068974-2	11824194
C08	AC068974-2	11974598
C08	DG8S250	12427095
C08	AF188029-1	12517357
C08	AF188029-7	12558445
C08	AF188029-10	12572944
C08	AF188029-12	12583159
C08	DG8S301	12612075
C08	DG8S308	12617557
C08	DG8S188	12654843
C08	DG8S245	12665541
C08	DG8S192	12759031

FIG. 8C

#name	chrom	strand	txStart	txEnd	cdsStart	cdsEnd	exonCount	exonStarts	exonEnds	proteinID	alignID
AF355799	chr8	-	7004812	7007356	7005040	7005887	3	7004812,7005734,7007293,	7005058,7005921,7007356,	Q8TEZ3	19512
NM_004084	chr8	-	7014400	7016825	7014521	7015386	3	7014400,7015211,7016757,	7014631,7015398,7016825,	DEFN_HUMAN	dna66
AF355799	chr8	-	7023915	7026459	7024143	7024990	3	7023915,7024837,7026396,	7024161,7025024,7026459,	Q8TEZ3	19511
BC027917	chr8	-	7033503	7035916	7033624	7034485	3	7033503,7034310,7035856,	7033734,7034497,7035916,	DEFN_HUMAN	3745
NM_005217	chr8	-	7033507	7035929	7033624	7034485	3	7033507,7034310,7035856,	7033734,7034497,7035929,	DEFN_HUMAN	dna68
NM_021010	chr8	-	7072941	7074372	7073065	7074332	2	7072941,7074160,	7073178,7074372,	DEF5_HUMAN	dna69
AK090418	chr8	-	7278254	7283114	7282743	7283114	1	7278254,	7283114,	Q8NF61	17580
AK090418	chr8	-	7285876	7290736	7290365	7290736	1	7285876,	7290736,	Q8NF61	17579
AK090418	chr8	-	7293498	7298358	7297987	7298358	1	7293498,	7298358,	Q8NF61	17582
AK090418	chr8	-	7301120	7305980	7305609	7305980	1	7301120,	7305980,	Q8NF61	17583
AK090418	chr8	-	7308742	7313602	7313231	7313602	1	7308742,	7313602,	Q8NF61	17581
AF301470	chr8	-	7446603	7447983	7446618	7447765	2	7446603,7447707,	7446764,7447983,	D103_HUMAN	3646
AF168616	chr8	-	7468250	7481305	7468513	7481138	4	7468250,7468758,7480341,7481077,	7468535,7468834,7480494,7481305,	SPGB_HUMAN	38437
AJ314834	chr8	-	7487938	7492717	7487990	7492703	2	7487938,7492645,	7488151,7492717,	D104_HUMAN	3649
AJ314834	chr8	+	7565027	7569803	7565041	7569751	2	7565027,7569590,	7565099,7569803,	D104_HUMAN	3650
AF301470	chr8	+	7609760	7611140	7609978	7611125	2	7609760,7610979,	7610036,7611140,	D103_HUMAN	3647
Z71389	chr8	+	7623246	7625268	7623269	7625187	2	7623246,7625030,	7623327,7625268,	BD02_HUMAN	2333
U87595	chr8	+	7929832	7930426	7929832	7930426	1	7929832,	7930426,	O15314	7294
AF217970	chr8	+	7968927	7973420	7969257	7969701	2	7968927,7972655,	7970089,7973420,	Q9HBS9	31542
AL833872	chr8	-	8046292	8056876	8048710	8056876	2	8046292,8056260,	8047853,8056876,	Q8N3N5	13875
BC016047	chr8	+	8431012	8432652	8431012	8431822	1	8431012,	8432652,	Q96B33	21596
BC014226	chr8	-	8514282	8620457	8514566	8620457	3	8514282,8525909,8618605,	8514600,8526036,8620457,	Q96CI0	22026
AB016816	chr8	-	8514566	8621603	8514566	8621603	3	8514566,8525909,8618605,	8514600,8526036,8621603,	Q9Y4C4	37002
AL137679	chr8	+	8731388	8761883	8746898	8758579	8	8731388,8736514,8740086,8744866,8746841,8748894,8758336,8761093,	8731718,8736693,8740297,8744950,8746951,8749009,8758626,8761883,	Q9NSX3	32471
BC035279	chr8	+	8731484	8759524	8731608	8758579	7	8731484,8736514,8740088,8744866,8746841,8748894,8758336,	8731718,8736693,8740297,8744950,8746951,8749009,8759524,	Q8IV48	11046
AK024067	chr8	-	8866540	8879241	8869338	8870196	2	8866540,8879107,	8870213,8879241,	Q9H812	30500
AF082557	chr8	+	9308729	9510891	9308729	9505281	26	9308729,9344126,9408495,9409269,9433207,9434731,9435355,9436915,9438499,9438686,9448918,9455185,9459434,9461823,9463409,9463921,9476568,9480153,9481088,9490060,9491691,9493260,9494236,9494783,9498650,9505194,	9308928,9344222,9408532,9409345,9433302,9434798,9435542,9437037,9438591,9438765,9449090,9455265,9459580,9461989,9463629,9464031,9476757,9480391,9481171,9490181,9491789,9493335,9494342,9494970,9498807,9510891,	TNK1_HUMAN	39059
AJ242973	chr8	+	9782860	10157287	9783061	10156857	6	9782860,9936377,9973648,10030078,10048427,10156692,	9783203,9936448,9973768,10030183,10048534,10157287,	MSRA_HUMAN	6395
AY16834	chr8	-	10334893	10383647	10335439	10351748	4	10334893,10344990,10351137,10383442,	10341891,10345132,10351765,10383647,	Q8IWN7	11658
AK055556	chr8	-	10453281	10459057	10454282	10458978	2	10453281,10458740,	10455211,10459057,	SOX7_HUMAN	38397
AK000572	chr8	-	10493703	10568418	10493945	10568301	7	10493703,10548737,10554896,10560209,10561436,10563210,10568282,	10494481,10548814,10554789,10560288,10561529,10563320,10568416,	PII1_HUMAN	9150
BC024146	chr8	-	10624663	10731026	10628496	10653302	3	10624663,10653178,10730932,	10627461,10653375,10731026,	Q8TBA0	18467
AJ305312	chr8	-	10836335	10838271	10838720	10837011	1	10836335,	10838271,	Q8WWP8	20435

FIG. 9.A1

AJ312027	chr8	-	10851925	10854609	10852331	10852637	2	10851925,10854302,	10853361,10854609,	Q8TCU8	18953
AJ312026	chr8	-	10855014	10858780	10857345	10857588	2	10855014,10857203,	10855616,10858780,	Q8TCU9	18954
AJ307469	chr8	-	10865446	10867152	10866041	10866326	1	10865446,	10867152,	Q8WWP5	20432
AJ301560	chr8	-	10923010	10929883	10923665	10929883	2	10923010,10929119,	10923765,10929883,	Q96KT3	24395
AJ301561	chr8	-	10976169	10996409	10976169	10976257	2	10976169,10996332,	10976333,10996409,	Q96KT2	24394
AJ291676	chr8	-	11012043	11013612	11012551	11012914	1	11012043,	11013612,	Q96KT8	24398
AJ297823	chr8	+	11013350	11056681	11013432	11051332	10	11013350,11023737,11028566,11033384,11034733,11036070,11043466,11045216,11048230,11051168,	11013614,11023846,11028692,11033558,11034951,11038232,11043608,11045437,11048382,11056681,	Q96QG7	25632
AL080178	chr8	+	11045418	11053063	11045418	11051332	3	11045418,11048230,11051168,	11045437,11048382,11053063,	Q9Y4N6	37070
AJ291677	chr8	+	11059529	11060730	11059650	11060867	1	11059529,	11060730,	Q96KT7	24397
AJ301562	chr8	+	11068180	11096996	11068221	11093347	9	11068180,11084648,11086679,11087757,11089929,11090178,11093263,11094126,11096822,	11068263,11084835,11086722,11087828,11090079,11090351,11093533,11094332,11096996,	Q96KT1	24393
AK057762	chr8	+	11076188	11094632	11084663	11093347	8	11076188,11083612,11084648,11086679,11087757,11090178,11093263,11094126,	11076249,11083722,11084835,11086722,11087828,11090351,11093533,11094632,	Q96LV6	24652
AY101186	chr8	+	11084663	11094266	11084663	11093347	7	11084663,11086679,11087757,11089929,11090178,11093263,11094126,	11084835,11086722,11087828,11090079,11090351,11093533,11094266,	Q8IZJ6	12514
AY101187	chr8	+	11084663	11094266	11084663	11091466	7	11084663,11086679,11087757,11090178,11091451,11093263,11094126,	11084835,11086722,11087828,11090351,11091517,11093533,11094266,	Q8IZJ5	12513
AJ301563	chr8	+	11096945	11167201	11163609	11167086	7	11096945,11112356,11129609,11162463,11163373,11166583,11166979,	11096996,11112545,11129709,11162679,11163648,11166754,11167201,	Q96KT0	24392
AL834122	chr8	-	11150006	11195288	11152916	11172955	3	11150006,11172674,11195169,	11153180,11173352,11195288,	CH13_HUMAN	3027
S76617	chr8	+	11222543	11293142	11271767	11292651	13	11222543,11271766,11274594,11276574,11277566,11278701,11283285,11283874,11285200,11286504,11289844,11291521,11292445,	11223134,11271890,11274646,11276668,11277665,11278805,11283432,11284027,11285380,11286581,11289995,11291653,11293142,	BLK_HUMAN	2373
AJ291678	chr8	+	11305077	11309884	11309412	11309691	3	11305077,11306912,11309012,	11305860,11307184,11309884,	Q96KT6	24396
AF318320	chr8	+	11436561	11439084	11436855	11437479	1	11436561,	11439084,	Q8WYX8	20868
L34357	chr8	+	11436615	11487674	11436855	11487018	6	11436615,11477461,11478653,11483588,11485477,11486835,	11437471,11477628,11478779,11483676,11485626,11487674,	GAT4_HUMAN	4597
AK055534	chr8	+	11489798	11491766	11489956	11490649	1	11489798,	11491766,	Q96NF6	25169
AK097389	chr8	+	11498251	11515888	11508185	11514816	4	11498251,11508140,11511745,11514505,	11498334,11508493,11511942,11515888,	Q8N842	15149
AK056206	chr8	+	11498290	11515888	11499990	11514816	5	11498290,11499988,11508140,11511745,11514505,	11498878,11500128,11508493,11511942,11515888,	Q969S2	21234
X69141	chr8	+	11531288	11567841	11531375	11567152	8	11531288,11537336,11538209,11550292,11554566,11558766,11560060,11566930,	11531474,11537434,11538393,11550421,11554758,11558963,11560213,11567841,	FDFT_HUMAN	4319
BC010240	chr8	-	11572866	11596622	11573667	11581997	11	11572866,11574203,11575594,11576221,11576609,11577588,11579408,11581152,11581871,11592918,11596543.	11573765,11574332,11575711,11576365,11576695,11577707,11579523,11581238,11582022,11593006,11596622,	CATB_HUMAN	2738
Y18460	chr8	-	11574222	11579423	11574222	11579423	7	11574222,11575594,11576221,11576609,11577588,11577656,11579408,	11574332,11575711,11576365,11576695,11577650,11577707,11579423.	CAA77178	2585
AK091259	chr8	+	11742684	11746017	11743049	11744126	1	11742684,	11746017,	Q8N249	13155
AK098138	chr8	-	12057113	12069056	12060419	12069044	7	12057113,12058189,12060357,12061681,12064782,12066752,12068948,	12058085,12058690,12060507,12061815,12064863,12066815,12069056,	Q8N7N1	14992
BC007983	chr8	-	12057125	12068656	12057828	12057981	8	12057125,12058137,12060357,12061333,12061681,12064782,12066752,12068553,	12058085,12058690,12060507,12061599,12061815,12064863,12066815,12068656,	Q96HX9	23595
AK094417	chr8	+	12197852	12199613	12197857	12198316	2	12197852,12198352,	12198324,12199613,	Q8N9I4	15642

FIG. 9.A2

AK092544	chr8	+	12211006	12213990	12211155	12211554	1	12211006,	12213990,	Q8NAJ9	16005
AK074329	chr8	-	12354606	12369463	12355796	12369406	7	12354608,12358427,12361601,12361874,12364436,12367986,12369401,	12355955,12358580,12361764,12362033,12364558,12368101,12369463,	Q8TEA0	19288
BC004538	chr8	-	12354608	12361920	12355796	12361920	4	12354608,12358427,12361601,12361874,	12355955,12358580,12361764,12361920,	Q9BSV1	26939

FIG. 9A3

#name	chrom	strand	txStart	txEnd	cdsStart	cdsEnd	exonCount	exonStarts	exonEnds	proteinID	alignID
AB002292	chr8	+	1922721	2057379	1922721	2056009	29	1922721,1942098,1956705,1958642,1963118,1965271,1967939,1975316,1978793,1981380,1984346,1992314,1993138,1995078,1997178,2002026,2004316,2008040,2021709,2022213,2022519,2024028,2025122,2027172,2028031,2032545,2044226,2051450,2055494,	1922859,1942182,1956861,1958930,1963182,1965348,1967996,1975480,1978910,1981495,1984453,1992392,1993318,1995195,1997271,2002197,2004462,2008216,2021825,2022341,2022620,2024150,2025209,2027396,2028189,2032688,2044401,2051573,2057379,	O15013	7189
BC040474	chr8	+	1957500	2002856	1965341	2002251	13	1957500,1958642,1963115,1965271,1967939,1975316,1981380,1984346,1992314,1993138,1995078,1997178,2002026,	1957562,1958930,1963182,1965348,1967996,1975480,1981495,1984453,1992392,1993318,1995195,1997271,2002856,	Q8IWD9	11475
BC036809	chr8	+	1974796	2026259	1975306	2025284	15	1974796,1981380,1984346,1992314,1993138,1995078,1997178,2002026,2004316,2008040,2021709,2022213,2022519,2024031,2025122,	1975480,1981495,1984453,1992392,1993318,1995195,1997271,2002197,2004462,2008216,2021825,2022341,2022620,2024150,2026259,	Q8IY77	12062
AF009205	chr8	+	1981401	2057387	1981401	2056009	19	1981401,1984346,1992314,1993138,1995078,1997178,2002026,2004316,2008040,2021709,2022213,2022519,2024028,2027172,2028031,2032545,2044226,2051450,2055494,	1981495,1984453,1992392,1993318,1995195,1997271,2002197,2004462,2008216,2021825,2022341,2022620,2024150,2027396,2028189,2032688,2044401,2051573,2057387,	O14665	7078
AB018254	chr8	+	2072623	2105682	2099938	2101810	2	2072623,2099030,	2072681,2105682,	Y711_HUMAN	39692
X69089	chr8	+	2143827	2243960	2149460	2243485	37	2143827,2149448,2150855,2156045,2156320,2157853,2167976,2168145,2171004,2171998,2174800,2177394,2178220,2183974,2188410,2190753,2192376,2194666,2197266,2199245,2201036,2204611,2204860,2207156,2207765,2214331,2214589,2216253,2221704,2222007,2222631,2227694,2239225,2239843,2240879,2241904,2243167,	2143863,2149567,2151011,2156184,2156478,2157948,2168065,2168196,2171169,2172160,2174942,2177594,2178274,2184102,2188594,2190928,2192498,2194854,2197393,2199424,2201151,2204768,2204967,2207201,2207902,2214476,2214649,2216321,2221818,2222095,2222670,2227800,2239389,2239680,2240902,2241960,2243960,	MYM2_HUMAN	6485
BC030605	chr8	-	2597655	2631033	2612570	2631033	5	2597655,2603235,2604295,2612451,2630962,	2598920,2603374,2604375,2612601,2631033,	Q8NCP1	16734

FIG. 9B1

AF333704	chr8	-	2946200	5002909	2946686	5002519	70	2946200,2950573,2957400,2958332,2959215,2962325,2963690,2965797,2969242,2970567,2971323,2973876,2974671,2981218,2982552,2986713,3006112,3008059,3026578,3037420,3060563,3095198,3099617,3104950,3114629,3115819,3116704,3118259,3126500,3150566,3159498,3165998,3170260,3189211,3195970,3196989,3198013,3207815,3209713,3213605,3222598,3227356,3231830,3238141,3292245,3315796,3316413,3351395,3356093,3367253,3375133,3377355,3395595,3404295,3407492,3414128,3416000,3417524,3476814,3501725,3583047,3594238,3624812,3716516,3762032,4006005,4040007,4428	2946846,2950706,2957488,2958445,2959377,2962370,2963870,2965909,2969316,2970741,2971497,2974056,2974846,2981401,2982726,2986902,3006286,3008233,3026752,3037615,3060749,3095387,3099784,3105139,3114743,3115900,3116850,3118437,3126689,3150776,3159615,3166068,3170379,3189316,3196069,3197113,3198217,3207911,3209827,3213722,3222793,3227544,3231969,3238333,3292448,3315923,3316605,3351552,3356263,3367442,3375349,3377472,3395784,3404483,3407631,3414323,3416327,3417708,3476927,3501829,3583169,3594366,3624900,3716594,3762145,4006213,4040202,4428168,4645661,5002909,	Q96RM4	25766
AY017307	chr8	-	2946200	5002804	2946686	5002519	67	2946200,2950573,2957400,2958332,2959215,2962325,2963690,2965797,2969242,2970567,2971323,2973818,2982552,2986713,3006112,3008059,3037420,3060563,3095198,3099617,3104950,3114629,3115819,3116704,3118259,3126500,3150566,3159498,3165998,3170260,3189211,3195970,3196989,3198013,3207815,3209713,3213605,3222598,3227356,3231830,3238141,3292245,3315796,3316413,3351395,3356093,3367253,3375133,3377355,3395595,3404295,3407492,3414128,3416000,3417524,3476814,3501725,3583047,3594238,3624812,3716516,3762032,4006005,4040007,4428055,4645444,5002434,	2946846,2950706,2957488,2958445,2959377,2962370,2963870,2965909,2969316,2970741,2971497,2981401,2982726,2986902,3006286,3008233,3037615,3060749,3095387,3099764,3105139,3114743,3115900,3116850,3118437,3126689,3150776,3159615,3166068,3170379,3189316,3196069,3197113,3198217,3207911,3209827,3213722,3222793,3227544,3231969,3238333,3292448,3315923,3316605,3351552,3356263,3367442,3375349,3377472,3395784,3404483,3407631,3414323,3416327,3417708,3476927,3501829,3583169,3594366,3624900,3716594,3762145,4006213,4040202,4428168,4645661,5002804,	Q96QU9	25714
AB067477	chr8	-	3159348	3375351	3159490	3375351	21	3159348,3165998,3170260,3189211,3195970,3196988,3198013,3207815,3209713,3213605,3222598,3227356,3231830,3238141,3292245,3315796,3316413,3351395,3356093,3367253,3375133,	3159615,3166068,3170379,3189316,3196067,3197113,3198217,3207911,3209827,3213722,3222793,3227544,3231969,3238333,3292448,3315923,3316605,3351552,3356263,3367442,3375351,	Q96PZ7	25556
BC030702	chr8	+	6414658	6454669	6439652	6453657	9	6414658,6414703,6417380,6422866,6439600,6444149,6447054,6450168,6452494,	6414665,6414791,6417472,6422985,6439688,6444264,6447198,6450258,6454669,	Q8NEM0	17402

FIG. 9B2

AK022909	chr8	+	6439652	6652387	6439652	6651151	12	6439652,6444149,6447054,6450168,6452494,6463244,6485695,6488815,6507953,6829555,6651095,6652339,	6439688,6444264,6447198,6450258,6453649,6463354,6485733,6488978,6508031,6629793,6651398,6652387,	Q9H9C7	30909
AF004327	chr8	-	6510773	6708927	6511202	6571036	11	6510773,6517033,6521779,6522778,6527965,6529279,6535656,6540433,6570748,6688911,6708914,	6511363,6517164,6521946,6522880,6528096,6529512,6535778,6540589,6571345,6688922,6708927,	AGP2_HUMAN	1689
AF218015	chr8	-	6510819	6571118	6511202	6529325	9	6510819,6517033,6521779,6522778,6527965,6529279,6535656,6540433,6570748,	6511363,6517164,6521946,6522880,6528093,6529512,6535778,6540589,6571118,	Q9HBP3	31507
AJ289780	chr8	-	6540527	6540683	6540527	6540565	1	6540527,	6540683,	Q9H4C1	29562
AJ289781	chr8	-	6570748	6571511	6570748	6571036	1	6570748,	6571511,	Q9H4C0	29561
AK057771	chr8	-	6623705	6625300	6624765	6625248	1	6623705,	6625300,	Q96LV3	24649
AL136587	chr8	+	6716768	6767787	6716770	6765490	8	6716768,6732971,6738812,6740682,6749762,6755771,6763152,6765264,	6716989,6733041,6738928,6740752,6749853,6755930,6763276,6767767,	PLCE_HUMAN	9192
X92744	chr8	-	6888489	6895811	6888577	6895744	2	6888489,6895683,	6888723,6895811,	BD01_HUMAN	2331
M98331	chr8	-	6942379	6943735	6942500	6943717	2	6942379,6943524,	6942610,6943735,	DEF6_HUMAN	3743
X65977	chr8	-	6953503	6955945	6953700	6954580	3	6953503,6954408,6955906,	6953822,6954592,6955945,	DEF4_HUMAN	3742
BC027917	chr8	-	6995290	6997714	6995411	6996276	3	6995290,6996101,6997654,	6995521,6996288,6997714,	DEFN_HUMAN	3746
NM_005217	chr8	-	6995294	6997727	6995411	6996276	3	6995294,6996101,6997654,	6995521,6996288,6997727,	DEFN_HUMAN	dna67

FIG. 9B3

#name	chrom	strand	txStart	txEnd	cdsStart	cdsEnd	exonCount	exonStarts	exonEnds	proteinID	alignID
AK094299	chr8	+	12584056	12640371	12584805	12623646	4	12584056,12584763,12623534,12638902,	12584082,12585059,12623701,12640371,	Q8N9K7	15665
BC016633	chr8	+	12639326	12656738	12645491	12654745	3	12639326,12645384,12653708,	12639344,12645558,12656738,	Q96AW6	21542
AB040889	chr8	+	12644964	12658866	12645329	12654745	2	12644964,12653708,	12645558,12658866,	Q9P272	34672
AB051510	chr8	-	12716063	13147507	12718511	13132850	18	12716063,12718990,12721187,12722952,12724018,12725312,12727459,12727786,12731099,12732047,12735490,12743442,12748286,12937969,13026253,13034170,13131749,13147302,	12718632,12719164,12721405,12723171,12724133,12725526,12727658,12727946,12731276,12733471,12735554,12743524,12748358,12938003,13026394,13034320,13132897,13147507,	RHG7_HUMAN	37623
AK024773	chr8	-	12847258	13147466	12847326	13132772	6	12847258,12937969,13026253,13034170,13131749,13147302,	12847475,12938003,13026394,13034320,13132897,13147466,	Q9H7A2	30261
BC031245	chr8	+	13199595	13200984	13199692	13200652	1	13199595,	13200984,	Q96LL4	24568
AK058156	chr8	+	13200164	13200988	13200232	13200652	1	13200164,	13200988,	Q96LJ9	24551
AY028700	chr8	-	13722564	14187627	13723143	14187627	7	13722564,13735078,13740863,13797280,13870292,13956803,14187432,	13723338,13735200,13740936,13797403,13870380,13956905,14187627,	Q96LD1	24519
BC010370	chr8	+	15172923	15397187	15173131	15396919	10	15172923,15255780,15283397,15292207,15294856,15306447,15363366,15376238,15381075,15390693,	15173269,15255950,15283515,15292348,15294997,15306537,15363430,15376313,15381166,15397187,	Q96FW0	22983
U42349	chr8	+	15172983	15396995	15173131	15390510	11	15172983,15255780,15283397,15292207,15294856,15306447,15363366,15376238,15381075,15390491,15396903,	15173269,15255950,15283515,15292348,15294997,15306537,15363430,15376313,15381166,15390556,15396995,	N33_HUMAN	6508

FIG. 9C1

D90187	chr8	-	15742159	15825340	15742785	15810689	10	15742159,15753118,15776258,15782931,15787764,15796765,15801158,15807887,15810586,15825328,	15742919,15753307,15776312,15783012,15787845,15796952,15801571,15808001,15810693,15825340,	MSRE_HUMAN	6396
AF037351	chr8	-	15742785	15810689	15742785	15810689	8	15742785,15776258,15782931,15787764,15796765,15801158,15807887,15810586,	15742919,15776312,15783012,15787845,15796952,15801571,15808001,15810689,	O60505	7691
AB044277	chr8	-	16659728	16669069	16659975	16668936	3	16659728,16662558,16668650,	16660221,16662662,16669069,	FGFK_HUMAN	4345
BC032868	chr8	+	16694192	16789537	16694192	16785679	15	16694192,16730987,16736591,16744886,16748596,16752139,16753867,16757449,16765361,16771294,16772316,16780996,16783348,16785610,16787191,	16694564,16731141,16736623,16744765,16748844,16752222,16753939,16757488,16765457,16771395,16772488,16781105,16783504,16785679,16789537,	Q8IYZ3	12338
BC039253	chr8	+	16823425	16889636	16823627	16884116	13	16823425,16851692,16853234,16862407,16864485,16865284,16872558,16874883,16876835,16877291,16882140,16884075,16887159,	16823757,16851719,16853329,16862528,16864555,16865317,16872679,16874996,16876962,16877384,16882253,16884150,16889636,	ZDH2_HUMAN	39908
BC007315	chr8	-	16896131	16913744	16897623	16912056	7	16896131,16899356,16901619,16904115,16909895,16911939,16913578,	16897661,16899441,16901764,16904277,16910089,16912151,16913744,	Q96IQ8	23830
L46722	chr8	-	16897449	16913669	16897623	16911987	7	16897449,16899330,16901619,16904115,16909895,16911939,16913592,	16897752,16899441,16901764,16904277,16910089,16912155,16913669,	CNO7_HUMAN	3229

FIG. 9C2

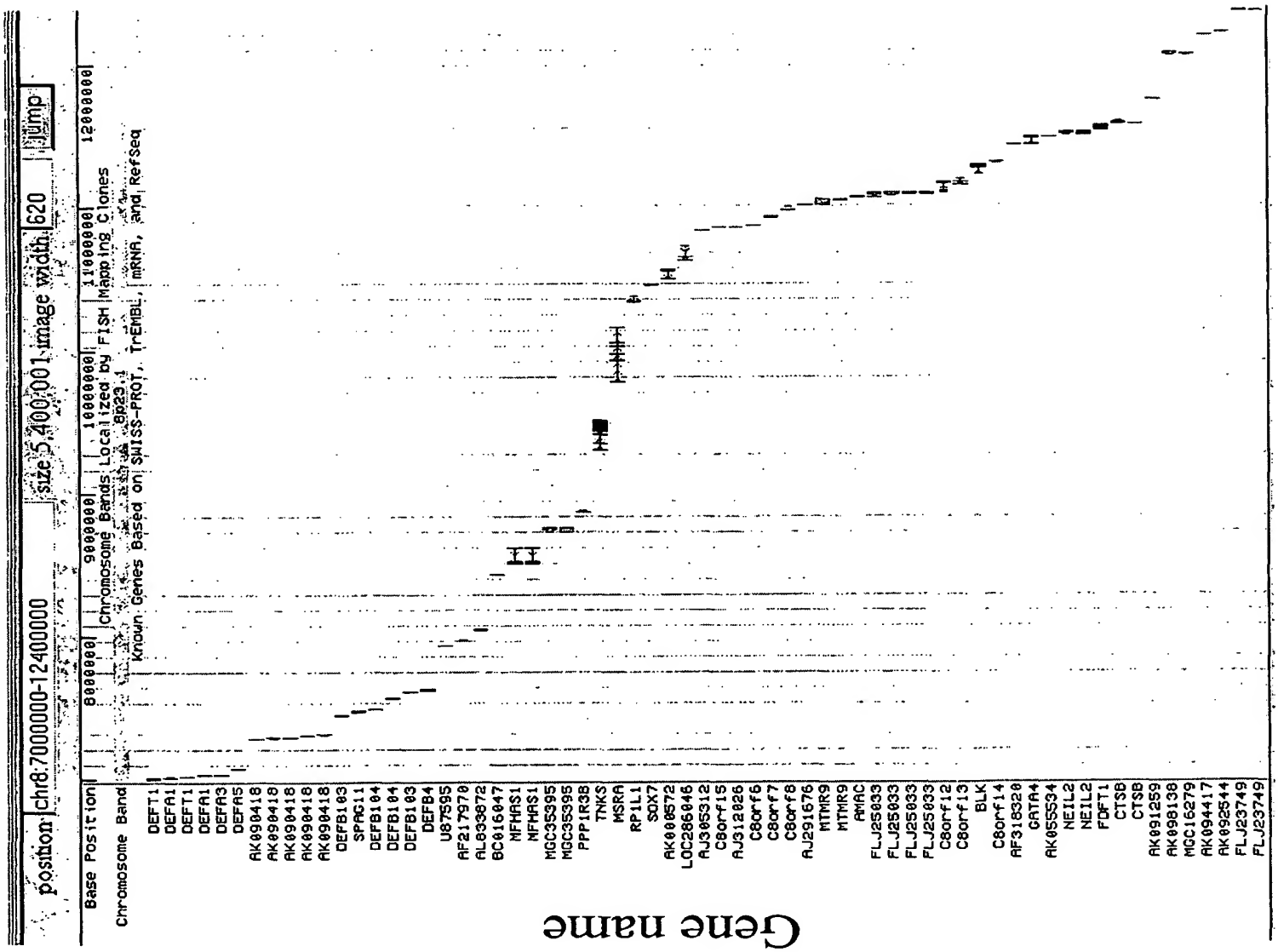
AK057204	chr8	+	16913874	16962462	16914148	16953331	12	16913874,16932810,16935161,16935759,16941638,16943300,16946931,16947142,16947278,16951376,16953250,16961890,	16914273,16932885,16935276,16935860,16941862,16943371,16947059,16947201,16947347,16951520,16953331,16962462,	Q96DL9	22334
AL834189	chr8	+	16913997	16964477	16914148	16941750	12	16913997,16932810,16935161,16935759,16938896,16941679,16943300,16946931,16947142,16951376,16953250,16961890,	16914273,16932885,16935276,16935860,16938967,16941862,16943371,16947059,16947347,16951520,16953331,16964477,	Q8N3D7	13580
BC022363	chr8	+	16941711	16962464	16943327	16953331	8	16941711,16943300,16946931,16947142,16947278,16951376,16953250,16961890,	16941862,16943371,16947059,16947201,16947347,16951520,16953331,16962464,	Q8TBL7	18567
AF073482	chr8	-	16968557	17015961	16969009	17015961	9	16968557,16971282,16972660,16976180,16978414,16980195,16998053,17008266,17015856,	16969184,16971423,16972861,16976230,16978540,16980305,16998186,17008401,17015961,	MTR7_HUMAN	6429
U76368	chr8	+	17205706	17231969	17210251	17231953	12	17205706,17210229,17211359,17215589,17217211,17218674,17221384,17225119,17227152,17228768,17230409,17231756,	17205834,17210627,17211515,17215755,17217345,17218897,17221907,17225222,17227358,17228935,17230518,17231969,	O15291	7280
D29990	chr8	+	17210251	17231953	17210251	17231953	11	17210251,17211359,17215589,17217211,17218674,17221384,17225119,17227152,17228768,17230409,17231756,	17210627,17211515,17215755,17217345,17218897,17221524,17225222,17227358,17228935,17230518,17231953,	CTR2_HUMAN	3519
U76369	chr8	+	17218848	17227260	17218848	17227260	4	17218848,17221384,17225119,17227152,	17218897,17221524,17225222,17227260,	O15292	7281

FIG. 9C3

D37965	chr8	+	17244009	17309927	17244070	17309614	8	17244009,17256260,17287863,17295299,17300886,17309425,	17244125,17256558,17288015,17295593,17301026,17309927,	Q15198	10168
AF121259	chr8	-	17310606	17364190	17312738	17364190	10	17310606,17313794,17316658,17319898,17320237,17321373,17322675,17341998,17351140,17364069,	17312952,17313892,17316775,17320094,17320311,17321479,17322878,17342065,17351355,17364190,	Q8WTT9	19616
AB033114	chr8	-	17310616	17422546	17312738	17422546	14	17310616,17313794,17316658,17319898,17320237,17321373,17322675,17341998,17351140,17380026,17382579,17390484,17410416,17420529,	17312952,17313892,17316775,17320094,17320311,17321479,17322878,17342065,17351355,17380065,17382714,17390646,17410612,17422546,	Q9ULD2	36001
AK024357	chr8	-	17310616	17351358	17312738	17322693	9	17310616,17313794,17316658,17319898,17320237,17321373,17322675,17341998,17351140,	17312952,17313892,17316775,17320094,17320311,17321479,17322878,17342065,17351358,	Q9H7T2	30425

FIG. 9C4

FIG 10


Position
Build 33
Gene name
position chr8:7000000-12400000
size 5,400,001
image width 620
jump
Base Position
Chromosome Bands Localized by FISH Mapping Clones
Known Genes Based on SWISS-PROT, TrEMBL, mRNA, and RefSeq
DEFT1
DEFA1
DEFT1
DEFA1
DEFA3
DEFA5
AK090418
AK090418
AK090418
AK090418
AK090418
DEFB103
SPAG11
DEFB104
DEFB104
DEFB103
DEFB4
U87595
AF217970
AL633872
BC016047
NFHAS1
NFHAS1
MGC35395
MGC35395
PPP1R3B
TNKS
MSRA
RP1L1
SOX7
AK000572
LOC286046
AJ305312
C8orf15
AJ312026
C8orf6
C8orf7
C8orf8
AJ291676
MTMR9
MTMR9
AMAC
FLJ25033
FLJ25033
FLJ25033
FLJ25033
C8orf12
C8orf13
BLK
C8orf14
AF318320
GATA4
AK055534
NEIL2
NEIL2
FDFT1
CTSB
CTSB
AK091259
AK098138
MGC16279
AK094417
AK092544
FLJ23749
FLJ23749

Appendix 3: Output of correlation of 120 markers with orientation.

Marker 1	Marker 2	D-prime	Correlation squared	P-value
AC022239-5	INVSNP	0.310348	0.0235464	0.0105919
AC068974-2	INVSNP	0.717901	0.246708	9.88E-10
AF131215-1	INVSNP	0.669229	0.208883	2.91E-10
AF131215-2	INVSNP	0.826054	0.543927	4.99E-21
AF131215-4	INVSNP	0.71176	0.250012	1.52E-13
AF188029-1	INVSNP	0.276857	0.0154451	0.130948
AF188029-10	INVSNP	0.164122	0.0138136	0.0107372
AF188029-12	INVSNP	0.220334	0.0103093	0.238536
AF188029-7	INVSNP	0.236232	0.0350131	0.0207016
AF287957-1	INVSNP	0.0873719	0.00252711	0.677768
D8S1130	INVSNP	0.360552	0.0267458	0.00277162
D8S1469	INVSNP	0.292488	0.0453051	0.00238796
D8S1695	INVSNP	0.749707	0.308838	8.65E-19
D8S1721	INVSNP	0.387456	0.0361409	0.00124697
D8S1759	INVSNP	0.635416	0.0727243	8.14E-11
D8S1825	INVSNP	0.804892	0.245683	3.89E-21
D8S265	INVSNP	0.655468	0.118719	2.06E-13
D8S351	INVSNP	0.67781	0.0971108	2.35E-12
D8S503	INVSNP	0.47876	0.101609	4.21E-06
D8S516	INVSNP	0.470889	0.129417	6.12E-08
D8S520	INVSNP	0.350366	0.0304078	8.61E-05
D8S542	INVSNP	0.444143	0.0821856	1.23E-07
D8S550	INVSNP	0.487033	0.0303895	7.80E-08
DG00AAHBG	INVSNP	0.595792	0.336392	0.00458499
DG00AAHBH	INVSNP	0.565833	0.180968	9.35E-05
DG00AAHBI	INVSNP	0.504277	0.179788	1.08E-05
DG8S117	INVSNP	0.442753	0.0220656	0.203544
DG8S118	INVSNP	0.383535	0.00698894	0.426846
DG8S127	INVSNP	0.890818	0.488779	5.89E-14
DG8S128	INVSNP	0.456743	0.125524	0.000221348
DG8S130	INVSNP	0.536247	0.132253	1.39E-05
DG8S134	INVSNP	1	0.0635899	2.52E-08
DG8S136	INVSNP	0.343063	0.0516092	0.00690024
DG8S137	INVSNP	0.655751	0.119269	2.42E-05
DG8S138	INVSNP	1	0.0584634	1.06E-07
DG8S147	INVSNP	0.566881	0.286732	6.58E-07
DG8S148	INVSNP	0.361632	0.0374806	2.22E-06
DG8S153	INVSNP	0.782853	0.210606	1.11E-15
DG8S155	INVSNP	0.604283	0.115256	3.42E-05
DG8S156	INVSNP	0.653866	0.330724	2.82E-11
DG8S159	INVSNP	0.568915	0.0133872	6.52E-05
DG8S161	INVSNP	0.841182	0.349055	6.81E-13
DG8S163	INVSNP	0.906095	0.589869	2.03E-23

FIG. 11A1

DG8S170	INVSNP	0.598019	0.302949	9.06E-11
DG8S177	INVSNP	0.320809	0.0215085	0.0422176
DG8S179	INVSNP	0.847218	0.471189	1.85E-13
DG8S181	INVSNP	0.714733	0.114141	2.32E-14
DG8S182	INVSNP	0.928892	0.197453	4.75E-08
DG8S188	INVSNP	0.136714	0.0106358	0.397153
DG8S192	INVSNP	0.217607	0.00997323	0.11848
DG8S197	INVSNP	0.764207	0.562667	2.34E-20
DG8S201	INVSNP	0.401621	0.0651737	0.000188696
DG8S212	INVSNP	1	0.036627	0.000368682
DG8S215	INVSNP	0.634833	0.146446	0.00116656
DG8S221	INVSNP	0.749998	0.165545	4.76E-17
DG8S232	INVSNP	0.347365	0.0307383	9.65E-11
DG8S238	INVSNP	1	0.0587153	7.29E-08
DG8S242	INVSNP	0.653286	0.403859	2.34E-10
DG8S245	INVSNP	0.0176728	2.32E-05	0.964474
DG8S249	INVSNP	0.434415	0.0358435	0.000176876
DG8S250	INVSNP	0.292022	0.0130765	0.182875
DG8S257	INVSNP	0.692608	0.369707	2.27E-15
DG8S258	INVSNP	0.3934	0.0637854	3.86E-06
DG8S261	INVSNP	0.757129	0.456215	6.63E-12
DG8S262	INVSNP	0.377734	0.0699983	0.00163984
DG8S265	INVSNP	0.387668	0.0643316	2.82E-06
DG8S266	INVSNP	0.558352	0.163973	1.11E-09
DG8S269	INVSNP	0.848498	0.61698	4.80E-24
DG8S271	INVSNP	0.475146	0.0674433	0.0049336
DG8S277	INVSNP	0.67332	0.138379	7.54E-08
DG8S285	INVSNP	0.182512	0.0225009	0.0857807
DG8S291	INVSNP	0.353319	0.078499	3.25E-08
DG8S292	INVSNP	0.502266	0.0559657	0.0189892
DG8S297	INVSNP	0.612404	0.142293	7.12E-09
DG8S298	INVSNP	1	0.122989	1.38E-14
DG8S301	INVSNP	0.159911	0.0113507	0.30016
DG8S302	INVSNP	0.507425	0.0728255	5.40E-11
DG8S303	INVSNP	0.516468	0.058	0.00460405
DG8S307	INVSNP	0.159702	0.0130769	0.238871
DG8S308	INVSNP	0.137742	0.00542977	0.0390388
DG8S316	INVSNP	0.694406	0.255881	3.36E-14
DG8S322	INVSNP	0.63348	0.188425	2.38E-13
DG8S323	INVSNP	0.406188	0.0403898	0.100275
DG8S324	INVSNP	0.650941	0.11013	1.90E-07
DG8S332	INVSNP	0.313896	0.0289007	0.0141458
DG8S333	INVSNP	0.770327	0.14615	4.97E-05
SG08S100	INVSNP	0.569098	0.132393	5.34E-05
SG08S102	INVSNP	0.853475	0.439721	1.16E-15
SG08S112	INVSNP	0.197699	0.0283795	0.097256
SG08S120	INVSNP	0.737674	0.471808	1.75E-17
SG08S138	INVSNP	0.765567	0.36206	6.68E-12
SG08S15	INVSNP	0.723465	0.394925	1.39E-14
SG08S26	INVSNP	0.72974	0.432938	2.31E-14
SG08S27	INVSNP	0.76487	0.456719	2.37E-15

FIG. 11A2

SG08S32	INVSNP	0.690147	0.448406	2.61E-15
SG08S35	INVSNP	0.715979	0.189307	1.18E-07
SG08S39	INVSNP	0.647568	0.244516	1.18E-06
SG08S42	INVSNP	0.462881	0.0770168	0.00761203
SG08S46	INVSNP	0.217101	0.00836067	0.296584
SG08S5	INVSNP	0.857381	0.643837	3.21E-25
SG08S50	INVSNP	0.491729	0.109579	0.000666173
SG08S506	INVSNP	0.468844	0.152268	0.000162305
SG08S507	INVSNP	0.849207	0.288162	3.04E-11
SG08S508	INVSNP	0.82544	0.332851	8.52E-12
SG08S510	INVSNP	0.89446	0.140689	2.35E-05
SG08S511	INVSNP	0.490152	0.238296	9.66E-07
SG08S512	INVSNP	0.514179	0.259522	4.85E-08
SG08S517	INVSNP	0.854815	0.442687	2.34E-15
SG08S520	INVSNP	0.827061	0.336667	1.87E-11
SG08S6	INVSNP	0.708812	0.27657	3.63E-09
SG08S70	INVSNP	0.856961	0.442137	5.74E-16
SG08S71	INVSNP	0.861792	0.456188	9.88E-17
SG08S73	INVSNP	0.852942	0.437359	9.84E-15
SG08S76	INVSNP	0.935397	0.436358	6.37E-17
SG08S90	INVSNP	0.489091	0.155061	7.64E-06
SG08S93	INVSNP	0.227004	0.0196952	0.237642
SG08S94	INVSNP	0.910261	0.2108	1.39E-05
SG08S95	INVSNP	0.844958	0.641432	5.16E-20
SG08S96	INVSNP	0.585711	0.160415	4.65E-05
SG08S97	INVSNP	0.146921	0.00392928	0.618463

FIG. 11A3

Appendix 3: Output of allelic frequencies associated with the orientation.

P-value	Relative Risk	Number of Affecteds	Frequency in Affecteds	Number of Controls	Frequency in Controls	Frequency under Null Hypothesis	Chi-square Statistic	Information	Allele of Marker 1	Marker 1	Allele of Marker 2	Marker 2
0.999994	1	0	0.350143	115	0.350143	0.350143	5.92E-11	1	4	AC022239-5	1	INVSNP
0.999994	1	0	0.262901	115	0.262901	0.262901	5.48E-11	1	4	AC022239-5	2	INVSNP
0.999993	1	0	0.186733	115	0.186733	0.186733	8.20E-11	1	0	AC022239-5	1	INVSNP
0.999993	1	0	0.08718	115	0.08718	0.08718	7.50E-11	1	0	AC022239-5	2	INVSNP
0.999992	1	0	0.080516	115	0.080516	0.080516	8.88E-11	1	8	AC022239-5	1	INVSNP
0.999993	1	0	0.006441	115	0.006441	0.006441	8.59E-11	1	8	AC022239-5	2	INVSNP
0.999992	1	0	0.021739	115	0.021739	0.021739	8.90E-11	1	-4	AC022239-5	1	INVSNP
0.999992	1	0	0.004348	115	0.004348	0.004348	8.90E-11	1	-12	AC022239-5	2	INVSNP
1	1	0	0.031192	73	0.031192	0.031192	0	1	12	AC068974-2	1	INVSNP
1	1	0	0.057849	73	0.057849	0.057849	-1.14E-13	1	12	AC068974-2	2	INVSNP
1	1	0	0.083645	73	0.083645	0.083645	0	1	14	AC068974-2	1	INVSNP
1	1	0	0.162931	73	0.162931	0.162931	-1.14E-13	1	14	AC068974-2	2	INVSNP
1	1	0	0.46354	73	0.46354	0.46354	0	1	0	AC068974-2	1	INVSNP
1	1	0	0.009063	73	0.009063	0.009063	-2.27E-13	1	0	AC068974-2	2	INVSNP
1	1	0	0.031432	73	0.031432	0.031432	-2.27E-13	1	16	AC068974-2	1	INVSNP
1	1	0	0.057609	73	0.057609	0.057609	-2.27E-13	1	16	AC068974-2	2	INVSNP
1	1	0	0.020548	73	0.020548	0.020548	-2.27E-13	1	6	AC068974-2	2	INVSNP
1	1	0	0.027041	73	0.027041	0.027041	1.14E-13	1	10	AC068974-2	1	INVSNP
1	1	0	0.007205	73	0.007205	0.007205	0	1	10	AC068974-2	2	INVSNP
1	1	0	0.013699	73	0.013699	0.013699	-2.27E-13	1	20	AC068974-2	2	INVSNP
1	1	0	0.006986	73	0.006986	0.006986	-1.14E-13	1	8	AC068974-2	1	INVSNP
1	1	0	0.013562	73	0.013562	0.013562	0	1	8	AC068974-2	2	INVSNP
1	1	0	0.006849	73	0.006849	0.006849	-2.27E-13	1	18	AC068974-2	2	INVSNP
1	1	0	0.006849	73	0.006849	0.006849	-2.27E-13	1	13	AC068974-2	1	INVSNP
0.999991	1	0	0.078213	111	0.078213	0.078213	1.19E-10	1	0	AF131215-1	1	INVSNP
0.999991	1	0	0.047913	111	0.047913	0.047913	1.19E-10	1	0	AF131215-1	2	INVSNP
0.999991	1	0	0.38885	111	0.38885	0.38885	1.16E-10	1	2	AF131215-1	1	INVSNP
0.999991	1	0	0.025564	111	0.025564	0.025564	1.18E-10	1	2	AF131215-1	2	INVSNP
0.999991	1	0	0.066388	111	0.066388	0.066389	1.18E-10	1	-2	AF131215-1	1	INVSNP
0.999992	1	0	0.226404	111	0.226404	0.226404	1.11E-10	1	-2	AF131215-1	2	INVSNP
0.999991	1	0	0.014005	111	0.014005	0.014005	1.19E-10	1	22	AF131215-1	1	INVSNP
0.999991	1	0	0.004013	111	0.004013	0.004013	1.17E-10	1	22	AF131215-1	2	INVSNP
0.999992	1	0	0.002636	111	0.002636	0.002636	1.04E-10	1	-4	AF131215-1	1	INVSNP
0.999991	1	0	0.006373	111	0.006373	0.006373	1.16E-10	1	-4	AF131215-1	2	INVSNP
0.999991	1	0	0.028457	111	0.028457	0.028457	1.14E-10	1	8	AF131215-1	1	INVSNP
0.999991	1	0	0.003074	111	0.003074	0.003074	1.15E-10	1	8	AF131215-1	2	INVSNP
0.999991	1	0	0.063063	111	0.063063	0.063063	1.20E-10	1	4	AF131215-1	1	INVSNP
0.999991	1	0	0.013514	111	0.013514	0.013514	1.20E-10	1	-6	AF131215-1	2	INVSNP
0.999991	1	0	0.007036	111	0.007036	0.007036	1.16E-10	1	10	AF131215-1	1	INVSNP
0.999991	1	0	0.024496	111	0.024496	0.024496	1.18E-10	1	10	AF131215-1	2	INVSNP
1	1	0	0.531611	116	0.531611	0.531611	0	1	0	AF131215-2	1	INVSNP
1	1	0	0.024423	116	0.024423	0.024423	0	1	0	AF131215-2	2	INVSNP
1	1	0	0.076954	116	0.076954	0.076954	-1.14E-13	1	4	AF131215-2	1	INVSNP
1	1	0	0.328219	116	0.328219	0.328219	0	1	4	AF131215-2	2	INVSNP
1	1	0	0.025056	116	0.025056	0.025056	0	1	8	AF131215-2	1	INVSNP
1	1	0	0.013738	116	0.013738	0.013738	-1.14E-13	1	8	AF131215-2	2	INVSNP
0.999998	1	0	0.430154	114	0.430154	0.430154	4.89E-12	1	0	AF131215-4	1	INVSNP
0.999998	1	0	0.0216	114	0.0216	0.0216	5.00E-12	1	0	AF131215-4	2	INVSNP
0.999998	1	0	0.164039	114	0.164039	0.164039	4.55E-12	1	14	AF131215-4	1	INVSNP
0.999998	1	0	0.257014	114	0.257014	0.257014	4.55E-12	1	14	AF131215-4	2	INVSNP
1	1	0	0.008176	114	0.008176	0.008176	3.41E-13	1	12	AF131215-4	1	INVSNP
0.999998	1	0	0.066386	114	0.066386	0.066386	4.09E-12	1	12	AF131215-4	2	INVSNP
0.999998	1	0	0.030702	114	0.030702	0.030702	4.89E-12	1	8	AF131215-4	1	INVSNP
0.999998	1	0	0.007281	114	0.007281	0.007281	5.00E-12	1	16	AF131215-4	1	INVSNP
0.999998	1	0	0.005877	114	0.005877	0.005877	4.89E-12	1	16	AF131215-4	2	INVSNP
0.999998	1	0	0.004386	114	0.004386	0.004386	4.89E-12	1	18	AF131215-4	2	INVSNP
0.999998	1	0	0.004386	114	0.004386	0.004386	4.89E-12	1	10	AF131215-4	1	INVSNP
0.999962	1	0	0.040595	114	0.040595	0.040595	2.30E-09	1	-6	AF188029-1	1	INVSNP
0.999962	1	0	0.012037	114	0.012037	0.012037	2.29E-09	1	-6	AF188029-1	2	INVSNP
0.999962	1	0	0.208582	114	0.208582	0.208582	2.27E-09	1	0	AF188029-1	1	INVSNP
0.999962	1	0	0.072119	114	0.072119	0.072119	2.28E-09	1	0	AF188029-1	2	INVSNP
0.999962	1	0	0.116762	114	0.116762	0.116762	2.30E-09	1	-8	AF188029-1	1	INVSNP
0.999962	1	0	0.106922	114	0.106922	0.106922	2.30E-09	1	-8	AF188029-1	2	INVSNP
0.999962	1	0	0.127628	114	0.127628	0.127629	2.29E-09	1	-4	AF188029-1	1	INVSNP
0.999962	1	0	0.1136	114	0.1136	0.113599	2.29E-09	1	-4	AF188029-1	2	INVSNP
0.999962	1	0	0.026068	114	0.026068	0.026067	2.28E-09	1	2	AF188029-1	1	INVSNP
0.999962	1	0	0.017792	114	0.017792	0.017793	2.28E-09	1	2	AF188029-1	2	INVSNP
0.999962	1	0	0.017544	114	0.017544	0.017544	2.30E-09	1	-12	AF188029-1	1	INVSNP

FIG. 11B1

0.999962	1	0	0.077087	114	0.077087	0.077087	2.29E-09	1	-2	AF188029-1	1	INVSNP
0.999962	1	0	0.015018	114	0.015018	0.015019	2.29E-09	1	-2	AF188029-1	2	INVSNP
0.999962	1	0	0.026085	114	0.026085	0.026085	2.29E-09	1	-10	AF188029-1	1	INVSNP
0.999962	1	0	0.009003	114	0.009003	0.009003	2.30E-09	1	-10	AF188029-1	2	INVSNP
0.999962	1	0	0.013158	114	0.013158	0.013158	2.30E-09	1	4	AF188029-1	2	INVSNP
0.999945	1	0	0.262927	114	0.262927	0.262929	4.81E-09	1	0	AF188029-10	1	INVSNP
0.999945	1	0	0.140582	114	0.140582	0.14058	4.82E-09	1	0	AF188029-10	2	INVSNP
0.999945	1	0	0.28156	114	0.28156	0.281559	4.79E-09	1	2	AF188029-10	1	INVSNP
0.999945	1	0	0.108791	114	0.108791	0.108792	4.82E-09	1	2	AF188029-10	2	INVSNP
0.999945	1	0	0.024981	114	0.024981	0.024981	4.82E-09	1	8	AF188029-10	1	INVSNP
0.999945	1	0	0.071511	114	0.071511	0.07151	4.84E-09	1	8	AF188029-10	2	INVSNP
0.999945	1	0	0.030975	114	0.030975	0.030975	4.84E-09	1	4	AF188029-10	1	INVSNP
0.999945	1	0	0.01727	114	0.01727	0.017271	4.82E-09	1	4	AF188029-10	2	INVSNP
0.999945	1	0	0.035522	114	0.035522	0.035521	4.82E-09	1	-2	AF188029-10	1	INVSNP
0.999945	1	0	0.021496	114	0.021496	0.021496	4.82E-09	1	-2	AF188029-10	2	INVSNP
0.999945	1	0	0.004386	114	0.004386	0.004386	4.84E-09	1	6	AF188029-10	1	INVSNP
0.999906	1	0	0.117898	115	0.117898	0.117897	1.40E-08	1	0	AF188029-12	1	INVSNP
0.999906	1	0	0.047319	115	0.047319	0.047321	1.40E-08	1	0	AF188029-12	2	INVSNP
0.999906	1	0	0.058949	115	0.058949	0.058949	1.40E-08	1	4	AF188029-12	1	INVSNP
0.999906	1	0	0.045399	115	0.045399	0.045399	1.40E-08	1	4	AF188029-12	2	INVSNP
0.999906	1	0	0.339813	115	0.339813	0.339813	1.40E-08	1	-12	AF188029-12	1	INVSNP
0.999906	1	0	0.225405	115	0.225405	0.225404	1.40E-08	1	-12	AF188029-12	2	INVSNP
0.999906	1	0	0.109427	115	0.109427	0.109428	1.40E-08	1	-4	AF188029-12	1	INVSNP
0.999906	1	0	0.029704	115	0.029704	0.029702	1.40E-08	1	-4	AF188029-12	2	INVSNP
0.999906	1	0	0.004348	115	0.004348	0.004348	1.40E-08	1	12	AF188029-12	2	INVSNP
0.999906	1	0	0.021739	115	0.021739	0.021739	1.40E-08	1	8	AF188029-12	1	INVSNP
0.999999	1	0	0.398707	115	0.398707	0.398707	5.68E-13	1	0	AF188029-7	1	INVSNP
1	1	0	0.149119	115	0.149119	0.149119	3.41E-13	1	0	AF188029-7	2	INVSNP
0.999999	1	0	0.230861	115	0.230861	0.230861	6.82E-13	1	-4	AF188029-7	1	INVSNP
0.999999	1	0	0.190878	115	0.190878	0.190878	5.68E-13	1	-4	AF188029-7	2	INVSNP
0.999999	1	0	0.005215	115	0.005215	0.005215	7.96E-13	1	2	AF188029-7	1	INVSNP
0.999999	1	0	0.007828	115	0.007828	0.007828	7.96E-13	1	2	AF188029-7	2	INVSNP
0.999999	1	0	0.004348	115	0.004348	0.004348	7.96E-13	1	-2	AF188029-7	2	INVSNP
0.999999	1	0	0.004348	115	0.004348	0.004348	7.96E-13	1	4	AF188029-7	2	INVSNP
0.999999	1	0	0.008696	115	0.008696	0.008696	7.96E-13	1	6	AF188029-7	2	INVSNP
0.999994	1	0	0.315096	67	0.315096	0.315096	5.09E-11	1	0	AF287957-1	1	INVSNP
0.999992	1	0	0.162516	67	0.162516	0.162516	1.00E-10	1	0	AF287957-1	2	INVSNP
0.999994	1	0	0.246253	67	0.246253	0.246253	5.28E-11	1	-6	AF287957-1	1	INVSNP
0.999992	1	0	0.141807	67	0.141807	0.141806	1.02E-10	1	-6	AF287957-1	2	INVSNP
0.999992	1	0	0.007463	67	0.007463	0.007463	1.05E-10	1	4	AF287957-1	2	INVSNP
0.999992	1	0	0.048528	67	0.048528	0.048528	1.05E-10	1	-4	AF287957-1	1	INVSNP
0.999992	1	0	0.026098	67	0.026098	0.026098	1.04E-10	1	-4	AF287957-1	2	INVSNP
0.999992	1	0	0.009525	67	0.009525	0.009525	1.04E-10	1	2	AF287957-1	1	INVSNP
0.999992	1	0	0.012863	67	0.012863	0.012863	1.04E-10	1	2	AF287957-1	2	INVSNP
0.999992	1	0	0.007463	67	0.007463	0.007463	1.05E-10	1	-2	AF287957-1	2	INVSNP
0.999992	1	0	0.007463	67	0.007463	0.007463	1.05E-10	1	-14	AF287957-1	1	INVSNP
0.999992	1	0	0.014925	67	0.014925	0.014925	1.05E-10	1	-14	AF287957-1	2	INVSNP
0.999943	1	0	0.006547	130	0.006547	0.006547	5.05E-09	1	-12	D8S1130	1	INVSNP
0.999943	1	0	0.047299	130	0.047299	0.047299	5.05E-09	1	-12	D8S1130	2	INVSNP
0.999943	1	0	0.19591	130	0.19591	0.195911	5.03E-09	1	4	D8S1130	1	INVSNP
0.999944	1	0	0.061782	130	0.061782	0.061782	5.01E-09	1	4	D8S1130	2	INVSNP
0.999943	1	0	0.124013	130	0.124013	0.124013	5.05E-09	1	0	D8S1130	1	INVSNP
0.999943	1	0	0.037526	130	0.037526	0.037526	5.05E-09	1	0	D8S1130	2	INVSNP
0.999943	1	0	0.064837	130	0.064837	0.064837	5.05E-09	1	8	D8S1130	1	INVSNP
0.999943	1	0	0.042855	130	0.042855	0.042855	5.05E-09	1	8	D8S1130	2	INVSNP
0.999943	1	0	0.099089	130	0.099089	0.099089	5.05E-09	1	-8	D8S1130	1	INVSNP
0.999943	1	0	0.127834	130	0.127834	0.127834	5.05E-09	1	-8	D8S1130	2	INVSNP
0.999943	1	0	0.109906	130	0.109906	0.109906	5.05E-09	1	-4	D8S1130	1	INVSNP
0.999943	1	0	0.032402	130	0.032402	0.032402	5.05E-09	1	-4	D8S1130	2	INVSNP
0.999943	1	0	0.038462	130	0.038462	0.038462	5.05E-09	1	12	D8S1130	1	INVSNP
0.999943	1	0	0.011236	130	0.011236	0.011236	5.04E-09	1	16	D8S1130	1	INVSNP
0.999942	1	0	0.000303	130	0.000303	0.000303	5.27E-09	1	16	D8S1130	2	INVSNP
0.999987	1	0	0.163471	128	0.163471	0.163471	2.77E-10	1	0	D8S1469	1	INVSNP
0.999987	1	0	0.113873	128	0.113873	0.113873	2.77E-10	1	0	D8S1469	2	INVSNP
0.999987	1	0	0.393429	128	0.393429	0.393429	2.77E-10	1	4	D8S1469	1	INVSNP
0.999987	1	0	0.110477	128	0.110477	0.110477	2.73E-10	1	4	D8S1469	2	INVSNP
0.999987	1	0	0.075679	128	0.075679	0.075679	2.76E-10	1	8	D8S1469	1	INVSNP
0.999987	1	0	0.068852	128	0.068852	0.068852	2.75E-10	1	8	D8S1469	2	INVSNP
0.999987	1	0	0.003906	128	0.003906	0.003906	2.81E-10	1	12	D8S1469	2	INVSNP
0.999987	1	0	0.009673	128	0.009673	0.009673	2.81E-10	1	3	D8S1469	1	INVSNP
0.999987	1	0	0.037202	128	0.037202	0.037202	2.81E-10	1	3	D8S1469	2	INVSNP
0.999987	1	0	0.006185	128	0.006185	0.006185	2.69E-10	1	-4	D8S1469	1	INVSNP
0.999987	1	0	0.017253	128	0.017253	0.017253	2.80E-10	1	-4	D8S1469	2	INVSNP
0.999927	1	0	0.487276	123	0.487276	0.487276	8.27E-09	1	0	D8S1695	1	INVSNP
0.999927	1	0	0.028984	123	0.028984	0.028984	8.27E-09	1	0	D8S1695	2	INVSNP
0.999927	1	0	0.02341	123	0.02341	0.023411	8.26E-09	1	8	D8S1695	1	INVSNP
0.999928	1	0	0.208297	123	0.208297	0.208296	8.25E-09	1	8	D8S1695	2	INVSNP
0.999927	1	0	0.007843	123	0.007843	0.007842	8.26E-09	1	6	D8S1695	1	INVSNP
0.999927	1	0	0.045003	123	0.045003	0.045004	8.26E-09	1	6	D8S1695	2	INVSNP
0.999927	1	0	0.008341	123	0.008341	0.008341	8.27E-09	1	10	D8S1695	1	INVSNP
0.999927	1	0	0.028245	123	0.028245	0.028245	8.27E-09	1	10	D8S1695	2	INVSNP
0.999927	1	0	0.09789	123	0.09789	0.09789	8.26E-09	1	4	D8S1695	1	INVSNP
0.999927	1	0	0.032191	123	0.032191	0.032191	8.27E-09	1	4	D8S1695	2	INVSNP

FIG. 11B2

0.999927	1	0	0.009386	123	0.009386	0.009386	8.26E-09	1	12	D8S1695	1	INVSNP
0.999928	1	0	0.006874	123	0.006874	0.006874	8.26E-09	1	12	D8S1695	2	INVSNP
0.999927	1	0	0.01626	123	0.01626	0.01626	8.27E-09	1	2	D8S1695	1	INVSNP
0.999555	1	0	0.236048	94	0.236048	0.236048	3.11E-07	1	34	D8S1721	1	INVSNP
0.999555	1	0	0.029909	94	0.029909	0.02991	3.12E-07	1	34	D8S1721	2	INVSNP
0.999555	1	0	0.042553	94	0.042553	0.042553	3.12E-07	1	36	D8S1721	1	INVSNP
0.999555	1	0	0.252583	94	0.252583	0.252587	3.12E-07	1	0	D8S1721	1	INVSNP
0.999555	1	0	0.114438	94	0.114438	0.114434	3.11E-07	1	0	D8S1721	2	INVSNP
0.999555	1	0	0.08138	94	0.08138	0.081379	3.12E-07	1	2	D8S1721	1	INVSNP
0.999555	1	0	0.051599	94	0.051599	0.0516	3.12E-07	1	2	D8S1721	2	INVSNP
0.999555	1	0	0.014775	94	0.014775	0.014775	3.12E-07	1	4	D8S1721	1	INVSNP
0.999555	1	0	0.070331	94	0.070331	0.070331	3.12E-07	1	4	D8S1721	2	INVSNP
0.999555	1	0	0.015957	94	0.015957	0.015957	3.12E-07	1	8	D8S1721	1	INVSNP
0.999555	1	0	0.006553	94	0.006553	0.006553	3.12E-07	1	24	D8S1721	1	INVSNP
0.999555	1	0	0.046638	94	0.046638	0.046638	3.12E-07	1	24	D8S1721	2	INVSNP
0.999555	1	0	0.015957	94	0.015957	0.015957	3.12E-07	1	32	D8S1721	1	INVSNP
0.999555	1	0	0.005319	94	0.005319	0.005319	3.12E-07	1	38	D8S1721	1	INVSNP
0.999555	1	0	0.005319	94	0.005319	0.005319	3.12E-07	1	6	D8S1721	1	INVSNP
0.999555	1	0	0.009724	94	0.009724	0.009721	3.12E-07	1	30	D8S1721	1	INVSNP
0.999553	1	0	0.000914	94	0.000914	0.000917	3.14E-07	1	30	D8S1721	2	INVSNP
0.999999	1	0	0.320948	130	0.320948	0.320948	4.55E-13	1	0	D8S1759	1	INVSNP
0.999999	1	0	0.279052	130	0.279052	0.279052	5.68E-13	1	0	D8S1759	2	INVSNP
0.999999	1	0	0.070538	130	0.070538	0.070538	4.55E-13	1	2	D8S1759	1	INVSNP
0.999999	1	0	0.006385	130	0.006385	0.006385	4.55E-13	1	2	D8S1759	2	INVSNP
0.999999	1	0	0.019231	130	0.019231	0.019231	5.68E-13	1	6	D8S1759	2	INVSNP
0.999999	1	0	0.080769	130	0.080769	0.080769	5.68E-13	1	4	D8S1759	1	INVSNP
0.999999	1	0	0.134615	130	0.134615	0.134615	6.82E-13	1	12	D8S1759	1	INVSNP
1	1	0	0.014158	130	0.014158	0.014158	3.41E-13	1	10	D8S1759	1	INVSNP
0.999999	1	0	0.024304	130	0.024304	0.024304	7.96E-13	1	10	D8S1759	2	INVSNP
0.999999	1	0	0.021279	130	0.021279	0.021279	6.82E-13	1	14	D8S1759	1	INVSNP
0.999999	1	0	0.005644	130	0.005644	0.005644	6.82E-13	1	14	D8S1759	2	INVSNP
0.999999	1	0	0.007692	130	0.007692	0.007692	6.82E-13	1	16	D8S1759	1	INVSNP
0.999999	1	0	0.015385	130	0.015385	0.015385	6.82E-13	1	8	D8S1759	2	INVSNP
1	1	0	0.122402	119	0.122402	0.122402	0	1	0	D8S1825	1	INVSNP
1	1	0	0.314573	119	0.314573	0.314573	2.27E-13	1	0	D8S1825	2	INVSNP
1	1	0	0.078908	119	0.078908	0.078908	1.14E-13	1	8	D8S1825	1	INVSNP
1	1	0	0.009327	119	0.009327	0.009327	0	1	8	D8S1825	2	INVSNP
1	1	0	0.117647	119	0.117647	0.117647	0	1	10	D8S1825	1	INVSNP
1	1	0	0.205882	119	0.205882	0.205882	0	1	6	D8S1825	1	INVSNP
1	1	0	0.085346	119	0.085346	0.085346	1.14E-13	1	2	D8S1825	1	INVSNP
1	1	0	0.023898	119	0.023898	0.023898	-1.14E-13	1	2	D8S1825	2	INVSNP
1	1	0	0.015866	119	0.015866	0.015866	0	1	4	D8S1825	1	INVSNP
1	1	0	0.005143	119	0.005143	0.005143	0	1	4	D8S1825	2	INVSNP
1	1	0	0.016807	119	0.016807	0.016807	0	1	12	D8S1825	1	INVSNP
1	1	0	0.004202	119	0.004202	0.004202	0	1	14	D8S1825	1	INVSNP
1	1	0	0.107339	121	0.107339	0.107339	-2.27E-13	1	4	D8S265	1	INVSNP
1	1	0	0.235636	121	0.235636	0.235636	0	1	4	D8S265	2	INVSNP
1	1	0	0.065166	121	0.065166	0.065166	0	1	0	D8S265	1	INVSNP
1	1	0	0.067065	121	0.067065	0.067065	0	1	0	D8S265	2	INVSNP
1	1	0	0.016529	121	0.016529	0.016529	-4.55E-13	1	6	D8S265	2	INVSNP
1	1	0	0.057851	121	0.057851	0.057851	-4.55E-13	1	-5	D8S265	1	INVSNP
1	1	0	0.120883	121	0.120883	0.120883	-4.55E-13	1	2	D8S265	1	INVSNP
1	1	0	0.027878	121	0.027878	0.027878	-4.55E-13	1	2	D8S265	2	INVSNP
1	1	0	0.090909	121	0.090909	0.090909	-4.55E-13	1	18	D8S265	1	INVSNP
1	1	0	0.086777	121	0.086777	0.086777	-4.55E-13	1	12	D8S265	1	INVSNP
1	1	0	0.11157	121	0.11157	0.11157	-2.27E-13	1	14	D8S265	1	INVSNP
1	1	0	0.008264	121	0.008264	0.008264	-2.27E-13	1	16	D8S265	1	INVSNP
1	1	0	0.004132	121	0.004132	0.004132	-2.27E-13	1	1	D8S265	1	INVSNP
0.999885	1	0	0.020683	105	0.020683	0.020683	2.09E-08	1	0	D8S351	1	INVSNP
0.999885	1	0	0.079317	105	0.079317	0.079317	2.09E-08	1	0	D8S351	2	INVSNP
0.999885	1	0	0.12177	105	0.12177	0.121769	2.09E-08	1	18	D8S351	1	INVSNP
0.999885	1	0	0.035373	105	0.035373	0.035374	2.09E-08	1	18	D8S351	2	INVSNP
0.999885	1	0	0.017031	105	0.017031	0.017031	2.09E-08	1	2	D8S351	1	INVSNP
0.999885	1	0	0.187731	105	0.187731	0.187731	2.09E-08	1	2	D8S351	2	INVSNP
0.999885	1	0	0.177921	105	0.177921	0.177921	2.09E-08	1	6	D8S351	1	INVSNP
0.999885	1	0	0.017317	105	0.017317	0.017317	2.09E-08	1	8	D8S351	2	INVSNP
0.999885	1	0	0.028292	105	0.028292	0.028293	2.09E-08	1	10	D8S351	1	INVSNP
0.999885	1	0	0.005041	105	0.005041	0.00504	2.09E-08	1	10	D8S351	2	INVSNP
0.999885	1	0	0.052381	105	0.052381	0.052381	2.09E-08	1	8	D8S351	1	INVSNP
0.999885	1	0	0.036414	105	0.036414	0.036414	2.09E-08	1	20	D8S351	1	INVSNP
0.999885	1	0	0.020728	105	0.020728	0.020728	2.09E-08	1	20	D8S351	2	INVSNP
0.999885	1	0	0.071429	105	0.071429	0.071429	2.09E-08	1	4	D8S351	1	INVSNP
0.999885	1	0	0.067785	105	0.067785	0.067784	2.09E-08	1	16	D8S351	1	INVSNP
0.999885	1	0	0.008405	105	0.008405	0.008406	2.09E-08	1	16	D8S351	2	INVSNP
0.999885	1	0	0.02058	105	0.02058	0.02058	2.09E-08	1	14	D8S351	1	INVSNP
0.999885	1	0	0.017515	105	0.017515	0.017515	2.09E-08	1	14	D8S351	2	INVSNP
0.999885	1	0	0.004762	105	0.004762	0.004762	2.09E-08	1	12	D8S351	1	INVSNP
0.999885	1	0	0.004762	105	0.004762	0.004762	2.09E-08	1	-2	D8S351	2	INVSNP
0.999885	1	0	0.004762	105	0.004762	0.004762	2.09E-08	1	22	D8S351	2	INVSNP
0.999996	1	0	0.126777	122	0.126777	0.126777	2.98E-11	1	-6	D8S503	1	INVSNP
0.999996	1	0	0.20519	122	0.20519	0.20519	2.97E-11	1	-6	D8S503	2	INVSNP
0.999996	1	0	0.295435	122	0.295435	0.295435	2.67E-11	1	0	D8S503	1	INVSNP
0.999997	1	0	0.032434	122	0.032434	0.032434	1.60E-11	1	0	D8S503	2	INVSNP

FIG. 11B3

0.999996	1	0	0.141876	122	0.141876	0.141876	2.35E-11	1	-2	D8S503	1	INVSNP
0.999997	1	0	0.058944	122	0.058944	0.058944	1.84E-11	1	-2	D8S503	2	INVSNP
0.999996	1	0	0.012912	122	0.012912	0.012912	2.96E-11	1	-4	D8S503	1	INVSNP
0.999996	1	0	0.036269	122	0.036269	0.036269	2.94E-11	1	-4	D8S503	2	INVSNP
0.999996	1	0	0.036885	122	0.036885	0.036885	2.98E-11	1	2	D8S503	1	INVSNP
0.999996	1	0	0.028547	122	0.028547	0.028547	2.83E-11	1	-8	D8S503	1	INVSNP
0.999996	1	0	0.012437	122	0.012437	0.012437	2.68E-11	1	-8	D8S503	2	INVSNP
0.999996	1	0	0.009208	122	0.009208	0.009208	2.86E-11	1	4	D8S503	1	INVSNP
0.999996	1	0	0.003088	122	0.003088	0.003088	2.63E-11	1	4	D8S503	2	INVSNP
0.999933	1	0	0.49559	130	0.49559	0.49559	7.13E-09	1	2	D8S516	1	INVSNP
0.999933	1	0	0.13518	130	0.13518	0.13518	7.14E-09	1	2	D8S516	2	INVSNP
0.999933	1	0	0.062919	130	0.062919	0.062919	7.14E-09	1	4	D8S516	1	INVSNP
0.999933	1	0	0.160158	130	0.160158	0.160158	7.13E-09	1	4	D8S516	2	INVSNP
0.999933	1	0	0.061539	130	0.061539	0.061539	7.14E-09	1	0	D8S516	1	INVSNP
0.999933	1	0	0.027153	130	0.027153	0.027153	7.13E-09	1	-2	D8S516	1	INVSNP
0.999933	1	0	0.030539	130	0.030539	0.030539	7.14E-09	1	-2	D8S516	2	INVSNP
0.999933	1	0	0.0028	130	0.0028	0.0028	7.13E-09	1	-4	D8S516	1	INVSNP
0.999933	1	0	0.004892	130	0.004892	0.004893	7.14E-09	1	-4	D8S516	2	INVSNP
0.999933	1	0	0.011539	130	0.011539	0.011539	7.14E-09	1	6	D8S516	2	INVSNP
0.999933	1	0	0.007692	130	0.007692	0.007692	7.14E-09	1	8	D8S516	2	INVSNP
0.999853	1	0	0.227223	114	0.227223	0.227224	3.38E-08	1	6	D8S520	1	INVSNP
0.999853	1	0	0.110496	114	0.110496	0.110495	3.38E-08	1	6	D8S520	2	INVSNP
0.999853	1	0	0.198127	114	0.198127	0.198129	3.38E-08	1	8	D8S520	1	INVSNP
0.999853	1	0	0.038715	114	0.038715	0.038713	3.38E-08	1	8	D8S520	2	INVSNP
0.999853	1	0	0.010655	114	0.010655	0.010655	3.38E-08	1	10	D8S520	1	INVSNP
0.999853	1	0	0.006889	114	0.006889	0.006889	3.38E-08	1	10	D8S520	2	INVSNP
0.999853	1	0	0.06697	114	0.06697	0.066968	3.38E-08	1	0	D8S520	1	INVSNP
0.999853	1	0	0.025135	114	0.025135	0.025137	3.38E-08	1	0	D8S520	2	INVSNP
0.999853	1	0	0.02375	114	0.02375	0.023751	3.38E-08	1	-10	D8S520	1	INVSNP
0.999853	1	0	0.04204	114	0.04204	0.042039	3.38E-08	1	-10	D8S520	2	INVSNP
0.999853	1	0	0.098406	114	0.098406	0.098405	3.38E-08	1	4	D8S520	1	INVSNP
0.999853	1	0	0.024401	114	0.024401	0.024402	3.38E-08	1	4	D8S520	2	INVSNP
0.999853	1	0	0.008772	114	0.008772	0.008772	3.38E-08	1	-12	D8S520	2	INVSNP
0.999853	1	0	0.014155	114	0.014155	0.014154	3.38E-08	1	2	D8S520	1	INVSNP
0.999853	1	0	0.091109	114	0.091109	0.091109	3.38E-08	1	2	D8S520	2	INVSNP
0.999853	1	0	0.005451	114	0.005451	0.005451	3.38E-08	1	-2	D8S520	1	INVSNP
0.999853	1	0	0.003321	114	0.003321	0.003321	3.38E-08	1	-2	D8S520	2	INVSNP
0.999853	1	0	0.004386	114	0.004386	0.004386	3.38E-08	1	12	D8S520	1	INVSNP
0.999994	1	0	0.310611	128	0.310611	0.310611	5.41E-11	1	0	D8S542	1	INVSNP
0.999993	1	0	0.212826	128	0.212826	0.212826	7.05E-11	1	0	D8S542	2	INVSNP
0.999993	1	0	0.293986	128	0.293986	0.293986	6.79E-11	1	2	D8S542	1	INVSNP
0.999993	1	0	0.018514	128	0.018514	0.018514	7.05E-11	1	2	D8S542	2	INVSNP
0.999993	1	0	0.043841	128	0.043841	0.04384	7.17E-11	1	4	D8S542	1	INVSNP
0.999994	1	0	0.120222	128	0.120222	0.120222	6.15E-11	1	4	D8S542	2	INVSNP
0.999997	1	0	0.096639	119	0.096639	0.096639	1.09E-11	1	-8	D8S550	1	INVSNP
0.999998	1	0	0.016099	119	0.016099	0.016099	9.55E-12	1	12	D8S550	1	INVSNP
0.999997	1	0	0.08054	119	0.08054	0.08054	1.07E-11	1	12	D8S550	2	INVSNP
0.999997	1	0	0.210239	119	0.210239	0.210239	1.11E-11	1	14	D8S550	1	INVSNP
0.999997	1	0	0.092282	119	0.092282	0.092282	1.09E-11	1	14	D8S550	2	INVSNP
0.999997	1	0	0.096639	119	0.096639	0.096639	1.09E-11	1	-2	D8S550	1	INVSNP
0.999997	1	0	0.012605	119	0.012605	0.012605	1.09E-11	1	8	D8S550	2	INVSNP
0.999998	1	0	0.019643	119	0.019643	0.019643	9.55E-12	1	18	D8S550	1	INVSNP
0.999998	1	0	0.026575	119	0.026575	0.026575	9.55E-12	1	18	D8S550	2	INVSNP
0.999997	1	0	0.071429	119	0.071429	0.071429	1.09E-11	1	-8	D8S550	1	INVSNP
0.999997	1	0	0.056397	119	0.056397	0.056397	1.11E-11	1	16	D8S550	1	INVSNP
0.999997	1	0	0.031838	119	0.031838	0.031838	1.00E-11	1	16	D8S550	2	INVSNP
0.999998	1	0	0.03105	119	0.03105	0.03105	7.50E-12	1	0	D8S550	1	INVSNP
0.999998	1	0	0.027773	119	0.027773	0.027773	6.59E-12	1	0	D8S550	2	INVSNP
0.999998	1	0	0.044723	119	0.044723	0.044723	8.19E-12	1	10	D8S550	1	INVSNP
0.999998	1	0	0.051916	119	0.051916	0.051916	7.96E-12	1	10	D8S550	2	INVSNP
0.999997	1	0	0.004202	119	0.004202	0.004202	1.09E-11	1	2	D8S550	1	INVSNP
0.999997	1	0	0.021008	119	0.021008	0.021008	1.09E-11	1	20	D8S550	2	INVSNP
0.999997	1	0	0.004202	119	0.004202	0.004202	1.09E-11	1	22	D8S550	2	INVSNP
0.999997	1	0	0.004202	119	0.004202	0.004202	1.09E-11	1	4	D8S550	1	INVSNP
0.999994	1	0	0.509649	23	0.509649	0.509649	5.65E-11	1	1	DG00AAHBG	1	INVSNP
0.999995	1	0	0.099047	23	0.099047	0.099047	3.39E-11	1	1	DG00AAHBG	2	INVSNP
0.999995	1	0	0.099047	23	0.099047	0.099047	3.39E-11	1	2	DG00AAHBG	1	INVSNP
0.999994	1	0	0.292258	23	0.292258	0.292258	5.36E-11	1	2	DG00AAHBG	2	INVSNP
0.999999	1	0	0.547767	107	0.547767	0.547767	2.96E-12	1	2	DG00AAHBH	1	INVSNP
0.999999	1	0	0.199897	107	0.199897	0.199897	2.56E-12	1	2	DG00AAHBH	2	INVSNP
0.999999	1	0	0.064383	107	0.064383	0.064383	1.08E-12	1	1	DG00AAHBH	1	INVSNP
0.999999	1	0	0.187954	107	0.187954	0.187954	2.61E-12	1	1	DG00AAHBH	2	INVSNP
0.99998	1	0	0.529477	107	0.529477	0.529477	6.08E-10	1	3	DG00AAHBI	1	INVSNP
0.99998	1	0	0.17613	107	0.17613	0.176131	6.16E-10	1	3	DG00AAHBI	2	INVSNP
0.99998	1	0	0.087345	107	0.087345	0.087346	6.20E-10	1	1	DG00AAHBI	1	INVSNP
0.99998	1	0	0.207047	107	0.207047	0.207047	6.14E-10	1	1	DG00AAHBI	2	INVSNP
0.999947	1	0	0.140205	94	0.140205	0.140204	4.48E-09	1	0	DG8S117	1	INVSNP
0.999947	1	0	0.030007	94	0.030007	0.030009	4.48E-09	1	0	DG8S117	2	INVSNP
0.999947	1	0	0.535327	94	0.535327	0.535328	4.41E-09	1	9	DG8S117	1	INVSNP
0.999947	1	0	0.294461	94	0.294461	0.29446	4.47E-09	1	9	DG8S117	2	INVSNP
0.999905	1	0	0.590826	128	0.590826	0.590827	1.41E-08	1	0	DG8S118	1	INVSNP
0.999905	1	0	0.331049	128	0.331049	0.331048	1.41E-08	1	0	DG8S118	2	INVSNP

FIG. 11B4

0.999905	1	0	0.061518	128	0.061518	0.061517	1.42E-08	1	5	DG8S118	1	INVSNP
0.999905	1	0	0.016607	128	0.016607	0.016609	1.42E-08	1	5	DG8S118	2	INVSNP
0.999853	1	0	0.464373	67	0.464373	0.464374	3.39E-08	1	0	DG8S127	1	INVSNP
0.999853	1	0	0.020702	67	0.020702	0.020701	3.40E-08	1	0	DG8S127	2	INVSNP
0.999853	1	0	0.100758	67	0.100758	0.100756	3.40E-08	1	6	DG8S127	1	INVSNP
0.999853	1	0	0.00372	67	0.00372	0.003721	3.39E-08	1	6	DG8S127	2	INVSNP
0.999853	1	0	0.061735	67	0.061735	0.061735	3.40E-08	1	1	DG8S127	1	INVSNP
0.999853	1	0	0.348712	67	0.348712	0.348712	3.40E-08	1	1	DG8S127	2	INVSNP
0.999999	1	0	0.590324	92	0.590324	0.590324	1.31E-12	1	0	DG8S128	1	INVSNP
0.999999	1	0	0.170546	92	0.170546	0.170546	1.14E-12	1	0	DG8S128	2	INVSNP
0.999999	1	0	0.094459	92	0.094459	0.094459	7.39E-13	1	4	DG8S128	1	INVSNP
0.999999	1	0	0.144672	92	0.144672	0.144672	1.02E-12	1	4	DG8S128	2	INVSNP
0.999995	1	0	0.394874	105	0.394874	0.394874	3.98E-11	1	4	DG8S130	1	INVSNP
0.999995	1	0	0.043221	105	0.043221	0.043221	4.32E-11	1	4	DG8S130	2	INVSNP
0.999995	1	0	0.253142	105	0.253142	0.253142	3.29E-11	1	0	DG8S130	1	INVSNP
0.999995	1	0	0.22781	105	0.22781	0.22781	3.18E-11	1	0	DG8S130	2	INVSNP
0.999995	1	0	0.028571	105	0.028571	0.028571	4.63E-11	1	-16	DG8S130	2	INVSNP
0.999995	1	0	0.004762	105	0.004762	0.004762	4.63E-11	1	-4	DG8S130	1	INVSNP
0.999995	1	0	0.009524	105	0.009524	0.009524	4.63E-11	1	-4	DG8S130	2	INVSNP
0.999995	1	0	0.023412	105	0.023412	0.023412	4.09E-11	1	8	DG8S130	1	INVSNP
0.999995	1	0	0.014683	105	0.014683	0.014683	3.91E-11	1	8	DG8S130	2	INVSNP
1	1	0	0.545082	122	0.545082	0.545082	0	1	0	DG8S134	1	INVSNP
1	1	0	0.352459	122	0.352459	0.352459	0	1	0	DG8S134	2	INVSNP
1	1	0	0.102459	122	0.102459	0.102459	0	1	4	DG8S134	1	INVSNP
0.99972	1	0	0.456736	104	0.456736	0.456738	1.23E-07	1	0	DG8S136	1	INVSNP
0.99972	1	0	0.187495	104	0.187495	0.187493	1.23E-07	1	0	DG8S136	2	INVSNP
0.99972	1	0	0.013739	104	0.013739	0.013739	1.24E-07	1	-6	DG8S136	1	INVSNP
0.99972	1	0	0.063184	104	0.063184	0.063184	1.24E-07	1	-6	DG8S136	2	INVSNP
0.99972	1	0	0.041344	104	0.041344	0.041344	1.24E-07	1	2	DG8S136	1	INVSNP
0.99972	1	0	0.025964	104	0.025964	0.025963	1.24E-07	1	2	DG8S136	2	INVSNP
0.999719	1	0	0.039577	104	0.039577	0.039575	1.24E-07	1	-4	DG8S136	1	INVSNP
0.999719	1	0	0.008499	104	0.008499	0.008502	1.24E-07	1	-4	DG8S136	2	INVSNP
0.99972	1	0	0.018587	104	0.018587	0.018587	1.24E-07	1	4	DG8S136	1	INVSNP
0.99972	1	0	0.024683	104	0.024683	0.024683	1.24E-07	1	4	DG8S136	2	INVSNP
0.99972	1	0	0.01333	104	0.01333	0.01333	1.24E-07	1	6	DG8S136	1	INVSNP
0.99972	1	0	0.029939	104	0.029939	0.029939	1.24E-07	1	6	DG8S136	2	INVSNP
0.999719	1	0	0.023742	104	0.023742	0.023741	1.24E-07	1	-2	DG8S136	1	INVSNP
0.999721	1	0	0.000297	104	0.000297	0.000297	1.22E-07	1	-2	DG8S136	2	INVSNP
0.99972	1	0	0.008331	104	0.008331	0.008331	1.24E-07	1	8	DG8S136	1	INVSNP
0.99972	1	0	0.039746	104	0.039746	0.039746	1.24E-07	1	8	DG8S136	2	INVSNP
0.99972	1	0	0.004808	104	0.004808	0.004808	1.24E-07	1	-14	DG8S136	2	INVSNP
0.999972	1	0	0.193763	38	0.193763	0.193763	1.21E-09	1	-2	DG8S137	1	INVSNP
0.999972	1	0	0.043079	38	0.043079	0.043079	1.23E-09	1	-2	DG8S137	2	INVSNP
0.999972	1	0	0.031265	38	0.031265	0.031265	1.23E-09	1	2	DG8S137	1	INVSNP
0.999972	1	0	0.008209	38	0.008209	0.008208	1.22E-09	1	2	DG8S137	2	INVSNP
0.999972	1	0	0.042557	38	0.042557	0.042557	1.24E-09	1	4	DG8S137	1	INVSNP
0.999972	1	0	0.062706	38	0.062706	0.062706	1.24E-09	1	4	DG8S137	2	INVSNP
0.999972	1	0	0.015798	38	0.015798	0.015798	1.25E-09	1	6	DG8S137	1	INVSNP
0.999972	1	0	0.194728	38	0.194728	0.194728	1.25E-09	1	6	DG8S137	2	INVSNP
0.999972	1	0	0.052632	38	0.052632	0.052632	1.25E-09	1	-4	DG8S137	1	INVSNP
0.999973	1	0	0.269248	38	0.269248	0.269248	1.18E-09	1	0	DG8S137	1	INVSNP
0.999972	1	0	0.046541	38	0.046541	0.046542	1.23E-09	1	0	DG8S137	2	INVSNP
0.999972	1	0	0.039474	38	0.039474	0.039474	1.25E-09	1	12	DG8S137	2	INVSNP
1	1	0	0.097345	113	0.097345	0.097345	0	1	-1	DG8S138	1	INVSNP
1	1	0	0.566372	113	0.566372	0.566372	0	1	0	DG8S138	1	INVSNP
1	1	0	0.336283	113	0.336283	0.336283	0	1	0	DG8S138	2	INVSNP
0.999995	1	0	0.131246	84	0.131246	0.131246	4.39E-11	1	0	DG8S147	1	INVSNP
0.999994	1	0	0.231849	84	0.231849	0.231849	5.45E-11	1	0	DG8S147	2	INVSNP
0.999994	1	0	0.553278	84	0.553278	0.553278	6.01E-11	1	2	DG8S147	1	INVSNP
0.999993	1	0	0.083627	84	0.083627	0.083627	6.68E-11	1	2	DG8S147	2	INVSNP
0.999998	1	0	0.075	120	0.075	0.075	4.89E-12	1	-4	DG8S148	1	INVSNP
0.999998	1	0	0.17032	120	0.17032	0.17032	4.66E-12	1	2	DG8S148	1	INVSNP
0.999998	1	0	0.07968	120	0.07968	0.07968	4.43E-12	1	2	DG8S148	2	INVSNP
0.999999	1	0	0.179826	120	0.179826	0.179826	3.52E-12	1	-2	DG8S148	1	INVSNP
0.999999	1	0	0.03684	120	0.03684	0.03684	4.55E-13	1	-2	DG8S148	2	INVSNP
0.999998	1	0	0.21652	120	0.21652	0.21652	4.55E-12	1	0	DG8S148	1	INVSNP
0.999998	1	0	0.204313	120	0.204313	0.204313	4.32E-12	1	0	DG8S148	2	INVSNP
0.999998	1	0	0.0375	120	0.0375	0.0375	4.89E-12	1	4	DG8S148	2	INVSNP
1	1	0	0.106162	114	0.106162	0.106162	2.27E-13	1	-2	DG8S153	1	INVSNP
1	1	0	0.306118	114	0.306118	0.306118	-2.27E-13	1	-2	DG8S153	2	INVSNP
1	1	0	0.123439	114	0.123439	0.123439	2.27E-13	1	0	DG8S153	1	INVSNP
1	1	0	0.012526	114	0.012526	0.012526	0	1	0	DG8S153	2	INVSNP
1	1	0	0.013158	114	0.013158	0.013158	3.41E-13	1	-8	DG8S153	2	INVSNP
1	1	0	0.030702	114	0.030702	0.030702	3.41E-13	1	2	DG8S153	1	INVSNP
1	1	0	0.129896	114	0.129896	0.129896	0	1	6	DG8S153	1	INVSNP
1	1	0	0.006068	114	0.006068	0.006068	0	1	6	DG8S153	2	INVSNP
1	1	0	0.026316	114	0.026316	0.026316	3.41E-13	1	14	DG8S153	1	INVSNP
1	1	0	0.132549	114	0.132549	0.132549	0	1	8	DG8S153	1	INVSNP
1	1	0	0.016573	114	0.016573	0.016573	1.14E-13	1	8	DG8S153	2	INVSNP
1	1	0	0.056199	114	0.056199	0.056199	-1.14E-13	1	10	DG8S153	1	INVSNP
1	1	0	0.005205	114	0.005205	0.005205	0	1	10	DG8S153	2	INVSNP

FIG. 11B5

1	1	0	0.02193	114	0.02193	0.02193	3.41E-13	1	4	DG8S153	1	INVSNP
1	1	0	0.008772	114	0.008772	0.008772	3.41E-13	1	12	DG8S153	1	INVSNP
1	1	0	0.004386	114	0.004386	0.004386	3.41E-13	1	-4	DG8S153	1	INVSNP
0.999903	1	0	0.335315	52	0.335315	0.335313	1.49E-08	1	4	DG8S155	1	INVSNP
0.999903	1	0	0.0493	52	0.0493	0.049302	1.49E-08	1	4	DG8S155	2	INVSNP
0.999903	1	0	0.019748	52	0.019748	0.019748	1.49E-08	1	8	DG8S155	1	INVSNP
0.999903	1	0	0.037944	52	0.037944	0.037944	1.49E-08	1	8	DG8S155	2	INVSNP
0.999903	1	0	0.042665	52	0.042665	0.042666	1.49E-08	1	2	DG8S155	1	INVSNP
0.999903	1	0	0.034258	52	0.034258	0.034258	1.49E-08	1	2	DG8S155	2	INVSNP
0.999903	1	0	0.02594	52	0.02594	0.02594	1.49E-08	1	6	DG8S155	1	INVSNP
0.999903	1	0	0.166368	52	0.166368	0.166368	1.49E-08	1	6	DG8S155	2	INVSNP
0.999903	1	0	0.028846	52	0.028846	0.028846	1.49E-08	1	14	DG8S155	1	INVSNP
0.999903	1	0	0.076923	52	0.076923	0.076923	1.49E-08	1	0	DG8S155	1	INVSNP
0.999903	1	0	0.093754	52	0.093754	0.093756	1.49E-08	1	10	DG8S155	1	INVSNP
0.999903	1	0	0.021631	52	0.021631	0.021628	1.49E-08	1	10	DG8S155	2	INVSNP
0.999903	1	0	0.040271	52	0.040271	0.040269	1.49E-08	1	12	DG8S155	1	INVSNP
0.999903	1	0	0.017422	52	0.017422	0.017423	1.49E-08	1	12	DG8S155	2	INVSNP
0.999903	1	0	0.009615	52	0.009615	0.009615	1.49E-08	1	-10	DG8S155	2	INVSNP
1	1	0	0.12722	115	0.12722	0.12722	0	1	6	DG8S156	1	INVSNP
1	1	0	0.255389	115	0.255389	0.255389	0	1	6	DG8S156	2	INVSNP
1	1	0	0.529302	115	0.529302	0.529302	0	1	0	DG8S156	1	INVSNP
1	1	0	0.062002	115	0.062002	0.062002	-1.14E-13	1	0	DG8S156	2	INVSNP
1	1	0	0.017391	115	0.017391	0.017391	-2.27E-13	1	-6	DG8S156	2	INVSNP
1	1	0	0.008696	115	0.008696	0.008696	-1.14E-13	1	9	DG8S156	2	INVSNP
1	1	0	0.602151	93	0.602151	0.602151	0	1	0	DG8S159	1	INVSNP
1	1	0	0.327957	93	0.327957	0.327957	-5.68E-14	1	0	DG8S159	2	INVSNP
1	1	0	0.05914	93	0.05914	0.05914	0	1	-2	DG8S159	1	INVSNP
1	1	0	0.010753	93	0.010753	0.010753	0	1	2	DG8S159	2	INVSNP
0.999992	1	0	0.440344	121	0.440344	0.440344	1.11E-10	1	0	DG8S161	1	INVSNP
0.999991	1	0	0.026598	121	0.026598	0.026598	1.24E-10	1	0	DG8S161	2	INVSNP
0.999991	1	0	0.200152	121	0.200152	0.200152	1.24E-10	1	2	DG8S161	1	INVSNP
0.999992	1	0	0.332906	121	0.332906	0.332906	1.09E-10	1	2	DG8S161	2	INVSNP
1	1	0	0.101264	126	0.101264	0.101264	5.68E-14	1	0	DG8S163	1	INVSNP
1	1	0	0.323339	126	0.323339	0.323339	1.14E-13	1	0	DG8S163	2	INVSNP
1	1	0	0.557466	126	0.557466	0.557466	5.68E-14	1	3	DG8S163	1	INVSNP
1	1	0	0.017931	126	0.017931	0.017931	1.14E-13	1	3	DG8S163	2	INVSNP
1	1	0	0.088646	114	0.088646	0.088646	-1.14E-13	1	0	DG8S170	1	INVSNP
1	1	0	0.222757	114	0.222757	0.222757	-1.14E-13	1	0	DG8S170	2	INVSNP
1	1	0	0.569248	114	0.569248	0.569248	1.14E-13	1	2	DG8S170	1	INVSNP
1	1	0	0.10619	114	0.10619	0.10619	0	1	2	DG8S170	2	INVSNP
1	1	0	0.013158	114	0.013158	0.013158	0	1	-4	DG8S170	2	INVSNP
0.999998	1	0	0.298785	87	0.298785	0.298785	5.57E-12	1	14	DG8S177	1	INVSNP
0.999998	1	0	0.172479	87	0.172479	0.172479	5.34E-12	1	14	DG8S177	2	INVSNP
0.999999	1	0	0.197931	87	0.197931	0.197931	3.41E-12	1	12	DG8S177	1	INVSNP
0.999999	1	0	0.037702	87	0.037702	0.037702	1.36E-12	1	12	DG8S177	2	INVSNP
0.999998	1	0	0.01485	87	0.01485	0.01485	4.21E-12	1	16	DG8S177	1	INVSNP
0.999998	1	0	0.042622	87	0.042622	0.042622	5.00E-12	1	18	DG8S177	2	INVSNP
0.999998	1	0	0.078902	87	0.078902	0.078902	4.66E-12	1	0	DG8S177	1	INVSNP
0.999998	1	0	0.013052	87	0.013052	0.013052	4.09E-12	1	0	DG8S177	2	INVSNP
0.999998	1	0	0.047463	87	0.047463	0.047463	5.57E-12	1	16	DG8S177	1	INVSNP
0.999998	1	0	0.067479	87	0.067479	0.067479	5.57E-12	1	16	DG8S177	2	INVSNP
0.999998	1	0	0.028736	87	0.028736	0.028736	5.68E-12	1	10	DG8S177	1	INVSNP
1	1	0	0.545727	91	0.545727	0.545727	0	1	0	DG8S179	1	INVSNP
1	1	0	0.025702	91	0.025702	0.025702	0	1	0	DG8S179	2	INVSNP
1	1	0	0.141086	91	0.141086	0.141086	0	1	7	DG8S179	1	INVSNP
1	1	0	0.287485	91	0.287485	0.287485	0	1	7	DG8S179	2	INVSNP
1	1	0	0.099143	83	0.099143	0.099143	-5.68E-13	1	10	DG8S181	1	INVSNP
1	1	0	0.159893	83	0.159893	0.159893	-1.14E-13	1	10	DG8S181	2	INVSNP
1	1	0	0.249128	83	0.249128	0.249128	-4.55E-13	1	12	DG8S181	1	INVSNP
1	1	0	0.015933	83	0.015933	0.015933	-4.55E-13	1	12	DG8S181	2	INVSNP
1	1	0	0.044465	83	0.044465	0.044465	-3.41E-13	1	4	DG8S181	1	INVSNP
1	1	0	0.057945	83	0.057945	0.057945	-1.14E-13	1	4	DG8S181	2	INVSNP
1	1	0	0.084337	83	0.084337	0.084337	-3.41E-13	1	0	DG8S181	2	INVSNP
1	1	0	0.204819	83	0.204819	0.204819	-3.41E-13	1	8	DG8S181	1	INVSNP
1	1	0	0.022928	83	0.022928	0.022928	-1.14E-13	1	16	DG8S181	1	INVSNP
1	1	0	0.007193	83	0.007193	0.007193	-2.27E-13	1	16	DG8S181	2	INVSNP
1	1	0	0.012048	83	0.012048	0.012048	-3.41E-13	1	18	DG8S181	2	INVSNP
1	1	0	0.042169	83	0.042169	0.042169	-3.41E-13	1	14	DG8S181	1	INVSNP
0.999993	1	0	0.648218	127	0.648218	0.648218	8.49E-11	1	0	DG8S182	1	INVSNP
0.999993	1	0	0.241546	127	0.241546	0.241546	8.43E-11	1	0	DG8S182	2	INVSNP
0.999993	1	0	0.005326	127	0.005326	0.005326	8.74E-11	1	-3	DG8S182	1	INVSNP
0.999993	1	0	0.10491	127	0.10491	0.10491	8.12E-11	1	-3	DG8S182	2	INVSNP
0.999997	1	0	0.482658	63	0.482658	0.482658	1.05E-11	1	0	DG8S188	1	INVSNP
0.999998	1	0	0.27131	63	0.27131	0.27131	9.55E-12	1	0	DG8S188	2	INVSNP
0.999998	1	0	0.128453	63	0.128453	0.128453	6.54E-12	1	-1	DG8S188	1	INVSNP
0.999998	1	0	0.117579	63	0.117579	0.117579	6.08E-12	1	-1	DG8S188	2	INVSNP
0.999385	1	0	0.353003	95	0.353003	0.35301	5.93E-07	1	0	DG8S192	1	INVSNP
0.999386	1	0	0.173313	95	0.173313	0.173306	5.93E-07	1	0	DG8S192	2	INVSNP
0.999386	1	0	0.102711	95	0.102711	0.10271	5.92E-07	1	2	DG8S192	1	INVSNP
0.999386	1	0	0.092026	95	0.092026	0.092027	5.92E-07	1	2	DG8S192	2	INVSNP
0.999386	1	0	0.005749	95	0.005749	0.00575	5.92E-07	1	16	DG8S192	1	INVSNP
0.999386	1	0	0.01004	95	0.01004	0.01004	5.92E-07	1	16	DG8S192	2	INVSNP

FIG. 11B6

0.999386	1	0	0.093843	95	0.093843	0.09384	5.92E-07	1	-2	DG8S192	1	INVSNP
0.999386	1	0	0.016684	95	0.016684	0.016687	5.92E-07	1	-2	DG8S192	2	INVSNP
0.999386	1	0	0.068837	95	0.068837	0.068829	5.91E-07	1	4	DG8S192	1	INVSNP
0.999386	1	0	0.004847	95	0.004847	0.004856	5.92E-07	1	4	DG8S192	2	INVSNP
0.999386	1	0	0.054804	95	0.054804	0.05481	5.91E-07	1	12	DG8S192	1	INVSNP
0.999386	1	0	0.013617	95	0.013617	0.013612	5.93E-07	1	12	DG8S192	2	INVSNP
0.999386	1	0	0.010526	95	0.010526	0.010526	5.92E-07	1	10	DG8S192	2	INVSNP
1	1	0	0.57531	120	0.57531	0.57531	-5.68E-14	1	0	DG8S197	1	INVSNP
1	1	0	0.053857	120	0.053857	0.053857	0	1	0	DG8S197	2	INVSNP
1	1	0	0.06219	120	0.06219	0.06219	-5.68E-14	1	1	DG8S197	1	INVSNP
1	1	0	0.308643	120	0.308643	0.308643	-5.68E-14	1	1	DG8S197	2	INVSNP
1	1	0	0.391583	100	0.391583	0.391583	-1.14E-13	1	0	DG8S201	1	INVSNP
1	1	0	0.123417	100	0.123417	0.123417	-1.14E-13	1	0	DG8S201	2	INVSNP
1	1	0	0.123408	100	0.123408	0.123408	-1.14E-13	1	4	DG8S201	1	INVSNP
1	1	0	0.161592	100	0.161592	0.161592	-1.14E-13	1	4	DG8S201	2	INVSNP
1	1	0	0.165009	100	0.165009	0.165009	-1.14E-13	1	-2	DG8S201	1	INVSNP
1	1	0	0.009991	100	0.009991	0.009991	0	1	-2	DG8S201	2	INVSNP
1	1	0	0.025	100	0.025	0.025	-1.14E-13	1	2	DG8S201	2	INVSNP
1	1	0	0.644	125	0.644	0.644	0	1	0	DG8S212	1	INVSNP
1	1	0	0.336	125	0.336	0.336	0	1	0	DG8S212	2	INVSNP
1	1	0	0.02	125	0.02	0.02	0	1	2	DG8S212	2	INVSNP
0.999964	1	0	0.283213	86	0.283213	0.283214	2.05E-09	1	4	DG8S215	1	INVSNP
0.999964	1	0	0.33888	86	0.33888	0.338879	2.05E-09	1	4	DG8S215	2	INVSNP
0.999964	1	0	0.321438	86	0.321438	0.321437	2.05E-09	1	0	DG8S215	1	INVSNP
0.999964	1	0	0.056469	86	0.056469	0.05647	2.03E-09	1	0	DG8S215	2	INVSNP
1	1	0	0.137931	29	0.137931	0.137931	0	1	0	DG8S221	1	INVSNP
1	1	0	0.155172	29	0.155172	0.155172	0	1	0	DG8S221	2	INVSNP
1	1	0	0.362069	29	0.362069	0.362069	0	1	5	DG8S221	1	INVSNP
1	1	0	0.155172	29	0.155172	0.155172	0	1	-2	DG8S221	1	INVSNP
1	1	0	0.068966	29	0.068966	0.068966	0	1	7	DG8S221	2	INVSNP
1	1	0	0.034483	29	0.034483	0.034483	0	1	4	DG8S221	1	INVSNP
1	1	0	0.086207	29	0.086207	0.086207	0	1	4	DG8S221	2	INVSNP
0.999993	1	0	0.231682	120	0.231682	0.231682	7.94E-11	1	0	DG8S232	1	INVSNP
0.999993	1	0	0.089152	120	0.089152	0.089152	7.81E-11	1	0	DG8S232	2	INVSNP
0.999993	1	0	0.22712	120	0.22712	0.22712	7.17E-11	1	2	DG8S232	1	INVSNP
0.999993	1	0	0.152046	120	0.152046	0.152046	6.92E-11	1	2	DG8S232	2	INVSNP
0.999993	1	0	0.1375	120	0.1375	0.1375	8.00E-11	1	-8	DG8S232	1	INVSNP
0.999993	1	0	0.020319	120	0.020319	0.020319	7.48E-11	1	-4	DG8S232	1	INVSNP
0.999993	1	0	0.083847	120	0.083847	0.083847	7.99E-11	1	-4	DG8S232	2	INVSNP
0.999993	1	0	0.012545	120	0.012545	0.012545	7.97E-11	1	4	DG8S232	1	INVSNP
0.999993	1	0	0.016621	120	0.016621	0.016621	7.99E-11	1	4	DG8S232	2	INVSNP
0.999993	1	0	0.029167	120	0.029167	0.029167	8.00E-11	1	-2	DG8S232	1	INVSNP
1	1	0	0.547244	127	0.547244	0.547244	0	1	0	DG8S238	1	INVSNP
1	1	0	0.358268	127	0.358268	0.358268	0	1	0	DG8S238	2	INVSNP
1	1	0	0.094488	127	0.094488	0.094488	0	1	-8	DG8S238	1	INVSNP
1	1	0	0.577257	83	0.577257	0.577257	5.68E-14	1	4	DG8S242	1	INVSNP
1	1	0	0.085394	83	0.085394	0.085394	5.68E-14	1	4	DG8S242	2	INVSNP
1	1	0	0.079369	83	0.079369	0.079369	5.68E-14	1	0	DG8S242	1	INVSNP
1	1	0	0.25798	83	0.25798	0.25798	5.68E-14	1	0	DG8S242	2	INVSNP
0.999998	1	0	0.576849	81	0.576849	0.576849	7.62E-12	1	0	DG8S245	1	INVSNP
0.999998	1	0	0.305867	81	0.305867	0.305867	7.45E-12	1	0	DG8S245	2	INVSNP
0.999998	1	0	0.05249	81	0.05249	0.05249	6.20E-12	1	-4	DG8S245	1	INVSNP
0.999998	1	0	0.027757	81	0.027757	0.027757	4.49E-12	1	-4	DG8S245	2	INVSNP
0.999998	1	0	0.024982	81	0.024982	0.024982	7.84E-12	1	4	DG8S245	1	INVSNP
0.999998	1	0	0.012055	81	0.012055	0.012055	7.05E-12	1	4	DG8S245	2	INVSNP
0.999993	1	0	0.351139	125	0.351139	0.351139	8.16E-11	1	0	DG8S249	1	INVSNP
0.999993	1	0	0.256861	125	0.256861	0.256861	8.08E-11	1	0	DG8S249	2	INVSNP
0.999993	1	0	0.179888	125	0.179888	0.179888	7.98E-11	1	-19	DG8S249	1	INVSNP
0.999993	1	0	0.008112	125	0.008112	0.008112	7.74E-11	1	-19	DG8S249	2	INVSNP
0.999992	1	0	0.012	125	0.012	0.012	8.86E-11	1	-17	DG8S249	2	INVSNP
0.999992	1	0	0.016	125	0.016	0.016	8.86E-11	1	-21	DG8S249	1	INVSNP
0.999993	1	0	0.051345	125	0.051345	0.051345	8.80E-11	1	-2	DG8S249	1	INVSNP
0.999993	1	0	0.028655	125	0.028655	0.028655	8.75E-11	1	-2	DG8S249	2	INVSNP
0.999992	1	0	0.008	125	0.008	0.008	8.86E-11	1	6	DG8S249	2	INVSNP
0.999993	1	0	0.005628	125	0.005628	0.005628	8.82E-11	1	2	DG8S249	1	INVSNP
0.999992	1	0	0.018372	125	0.018372	0.018372	8.84E-11	1	2	DG8S249	2	INVSNP
0.999992	1	0	0.032	125	0.032	0.032	8.86E-11	1	-6	DG8S249	1	INVSNP
0.999992	1	0	0.008	125	0.008	0.008	8.86E-11	1	4	DG8S249	2	INVSNP
0.999992	1	0	0.024	125	0.024	0.024	8.86E-11	1	-4	DG8S249	2	INVSNP
0.999942	1	0	0.018288	91	0.018288	0.018288	5.27E-09	1	-10	DG8S250	1	INVSNP
0.999942	1	0	0.01468	91	0.01468	0.014679	5.25E-09	1	-10	DG8S250	2	INVSNP
0.999942	1	0	0.181834	91	0.181834	0.181834	5.26E-09	1	-4	DG8S250	1	INVSNP
0.999942	1	0	0.059924	91	0.059924	0.059925	5.26E-09	1	-4	DG8S250	2	INVSNP
0.999942	1	0	0.038825	91	0.038825	0.038825	5.26E-09	1	2	DG8S250	1	INVSNP
0.999942	1	0	0.054581	91	0.054581	0.054581	5.27E-09	1	2	DG8S250	2	INVSNP
0.999942	1	0	0.11064	91	0.11064	0.11064	5.26E-09	1	4	DG8S250	1	INVSNP
0.999942	1	0	0.098151	91	0.098151	0.098152	5.26E-09	1	4	DG8S250	2	INVSNP
0.999942	1	0	0.06147	91	0.06147	0.061471	5.26E-09	1	-2	DG8S250	1	INVSNP
0.999942	1	0	0.015453	91	0.015453	0.015452	5.25E-09	1	-2	DG8S250	2	INVSNP
0.999942	1	0	0.156164	91	0.156164	0.156163	5.24E-09	1	0	DG8S250	1	INVSNP
0.999942	1	0	0.074606	91	0.074606	0.074606	5.25E-09	1	0	DG8S250	2	INVSNP
0.999942	1	0	0.016484	91	0.016484	0.016484	5.28E-09	1	8	DG8S250	1	INVSNP

FIG. 11B7

0.999942	1	0	0.008919	91	0.008919	0.00892	5.26E-09	1	-8	DG8S250	1	INVSNP
0.999942	1	0	0.013059	91	0.013059	0.013058	5.27E-09	1	-8	DG8S250	2	INVSNP
0.999942	1	0	0.017266	91	0.017266	0.017266	5.27E-09	1	6	DG8S250	1	INVSNP
0.999942	1	0	0.015701	91	0.015701	0.015701	5.26E-09	1	6	DG8S250	2	INVSNP
0.999942	1	0	0.032967	91	0.032967	0.032967	5.28E-09	1	-12	DG8S250	2	INVSNP
0.999942	1	0	0.010989	91	0.010989	0.010989	5.28E-09	1	-6	DG8S250	1	INVSNP
0.999999	1	0	0.568546	122	0.568546	0.568546	1.71E-12	1	0	DG8S257	1	INVSNP
0.999999	1	0	0.091291	122	0.091291	0.091291	1.71E-12	1	0	DG8S257	2	INVSNP
0.999999	1	0	0.019977	122	0.019977	0.019977	9.09E-13	1	-6	DG8S257	1	INVSNP
0.999999	1	0	0.041499	122	0.041499	0.041499	1.36E-12	1	-6	DG8S257	2	INVSNP
0.999999	1	0	0.034429	122	0.034429	0.034429	1.02E-12	1	-2	DG8S257	1	INVSNP
0.999999	1	0	0.223768	122	0.223768	0.223768	1.71E-12	1	-2	DG8S257	2	INVSNP
0.999999	1	0	0.016393	122	0.016393	0.016393	1.82E-12	1	2	DG8S257	1	INVSNP
0.999999	1	0	0.004098	122	0.004098	0.004098	1.82E-12	1	-9	DG8S257	1	INVSNP
0.999998	1	0	0.041714	108	0.041714	0.041714	4.09E-12	1	15	DG8S258	1	INVSNP
0.999998	1	0	0.129582	108	0.129582	0.129582	6.48E-12	1	15	DG8S258	2	INVSNP
0.999998	1	0	0.342035	108	0.342035	0.342035	7.28E-12	1	18	DG8S258	1	INVSNP
0.999998	1	0	0.21815	108	0.21815	0.21815	6.82E-12	1	18	DG8S258	2	INVSNP
0.999998	1	0	0.237333	108	0.237333	0.237333	8.53E-12	1	12	DG8S258	1	INVSNP
0.999998	1	0	0.008037	108	0.008037	0.008037	6.82E-12	1	12	DG8S258	2	INVSNP
0.999998	1	0	0.00463	108	0.00463	0.00463	8.64E-12	1	24	DG8S258	1	INVSNP
0.999998	1	0	0.013177	108	0.013177	0.013177	8.19E-12	1	21	DG8S258	1	INVSNP
0.999998	1	0	0.005341	108	0.005341	0.005341	7.50E-12	1	21	DG8S258	2	INVSNP
1	1	0	0.61991	88	0.61991	0.61991	0	1	2	DG8S261	1	INVSNP
1	1	0	0.090318	88	0.090318	0.090318	0	1	2	DG8S261	2	INVSNP
1	1	0	0.050545	88	0.050545	0.050545	0	1	0	DG8S261	1	INVSNP
1	1	0	0.239228	88	0.239228	0.239228	0	1	0	DG8S261	2	INVSNP
0.999978	1	0	0.012168	103	0.012168	0.012168	7.74E-10	1	-4	DG8S262	1	INVSNP
0.999978	1	0	0.016959	103	0.016959	0.016959	7.62E-10	1	-4	DG8S262	2	INVSNP
0.999978	1	0	0.453984	103	0.453984	0.453983	7.52E-10	1	0	DG8S262	1	INVSNP
0.999978	1	0	0.128541	103	0.128541	0.128541	7.63E-10	1	0	DG8S262	2	INVSNP
0.999978	1	0	0.032523	103	0.032523	0.032523	7.74E-10	1	-10	DG8S262	1	INVSNP
0.999978	1	0	0.083982	103	0.083982	0.083982	7.74E-10	1	-10	DG8S262	2	INVSNP
0.999978	1	0	0.126793	103	0.126793	0.126794	7.71E-10	1	2	DG8S262	1	INVSNP
0.999978	1	0	0.047964	103	0.047964	0.047964	7.68E-10	1	2	DG8S262	2	INVSNP
0.999978	1	0	0.013543	103	0.013543	0.013544	7.64E-10	1	-2	DG8S262	1	INVSNP
0.999978	1	0	0.005874	103	0.005874	0.005874	7.65E-10	1	-2	DG8S262	2	INVSNP
0.999978	1	0	0.016328	103	0.016328	0.016328	7.62E-10	1	4	DG8S262	1	INVSNP
0.999978	1	0	0.046779	103	0.046779	0.046779	7.68E-10	1	4	DG8S262	2	INVSNP
0.999978	1	0	0.004854	103	0.004854	0.004854	7.74E-10	1	-14	DG8S262	2	INVSNP
0.999978	1	0	0.009709	103	0.009709	0.009709	7.74E-10	1	8	DG8S262	2	INVSNP
0.999995	1	0	0.03076	117	0.03076	0.03076	3.46E-11	1	15	DG8S265	1	INVSNP
0.999995	1	0	0.135907	117	0.135907	0.135907	4.41E-11	1	15	DG8S265	2	INVSNP
0.999995	1	0	0.349032	117	0.349032	0.349032	4.38E-11	1	18	DG8S265	1	INVSNP
0.999995	1	0	0.219345	117	0.219345	0.219345	4.25E-11	1	18	DG8S265	2	INVSNP
0.999995	1	0	0.227332	117	0.227332	0.227332	4.72E-11	1	12	DG8S265	1	INVSNP
0.999995	1	0	0.007711	117	0.007711	0.007711	4.65E-11	1	12	DG8S265	2	INVSNP
0.999995	1	0	0.012535	117	0.012535	0.012535	4.42E-11	1	21	DG8S265	1	INVSNP
0.999995	1	0	0.004559	117	0.004559	0.004559	3.80E-11	1	21	DG8S265	2	INVSNP
0.999994	1	0	0.012821	117	0.012821	0.012821	4.88E-11	1	-6	DG8S265	1	INVSNP
0.999987	1	0	0.199159	111	0.199159	0.199159	2.49E-10	1	-2	DG8S266	1	INVSNP
0.999987	1	0	0.21976	111	0.21976	0.21976	2.50E-10	1	-2	DG8S266	2	INVSNP
0.999987	1	0	0.396591	111	0.396591	0.396591	2.72E-10	1	0	DG8S266	1	INVSNP
0.999987	1	0	0.035842	111	0.035842	0.035842	2.63E-10	1	0	DG8S266	2	INVSNP
0.999987	1	0	0.034881	111	0.034881	0.034881	2.73E-10	1	-4	DG8S266	1	INVSNP
0.999987	1	0	0.113767	111	0.113767	0.113767	2.64E-10	1	-4	DG8S266	2	INVSNP
1	1	0	0.065626	114	0.065626	0.065626	1.14E-13	1	-4	DG8S269	1	INVSNP
1	1	0	0.320339	114	0.320339	0.320339	1.71E-13	1	-4	DG8S269	2	INVSNP
1	1	0	0.572488	114	0.572488	0.572488	1.14E-13	1	0	DG8S269	1	INVSNP
1	1	0	0.028389	114	0.028389	0.028389	-5.68E-14	1	0	DG8S269	2	INVSNP
1	1	0	0.002237	114	0.002237	0.002237	1.14E-13	1	-5	DG8S269	1	INVSNP
1	1	0	0.010921	114	0.010921	0.010921	0	1	-5	DG8S269	2	INVSNP
0.999995	1	0	0.258938	79	0.258938	0.258938	3.46E-11	1	-2	DG8S271	1	INVSNP
0.999995	1	0	0.051189	79	0.051189	0.051189	3.77E-11	1	-2	DG8S271	2	INVSNP
0.999995	1	0	0.330114	79	0.330114	0.330114	3.55E-11	1	0	DG8S271	1	INVSNP
0.999995	1	0	0.309127	79	0.309127	0.309127	3.52E-11	1	0	DG8S271	2	INVSNP
0.999994	1	0	0.018544	79	0.018544	0.018544	4.81E-11	1	2	DG8S271	1	INVSNP
0.999994	1	0	0.02576	79	0.02576	0.02576	4.81E-11	1	2	DG8S271	2	INVSNP
0.999994	1	0	0.006329	79	0.006329	0.006329	4.81E-11	1	4	DG8S271	2	INVSNP
0.999969	1	0	0.005376	93	0.005376	0.005376	1.51E-09	1	-6	DG8S277	1	INVSNP
0.999969	1	0	0.192029	93	0.192029	0.19203	1.50E-09	1	10	DG8S277	1	INVSNP
0.999969	1	0	0.039154	93	0.039154	0.039153	1.50E-09	1	10	DG8S277	2	INVSNP
0.999969	1	0	0.319108	93	0.319108	0.319108	1.51E-09	1	0	DG8S277	1	INVSNP
0.999969	1	0	0.008849	93	0.008849	0.008849	1.51E-09	1	0	DG8S277	2	INVSNP
0.999969	1	0	0.025918	93	0.025918	0.025918	1.50E-09	1	-2	DG8S277	1	INVSNP
0.999969	1	0	0.086985	93	0.086985	0.086985	1.49E-09	1	-2	DG8S277	2	INVSNP
0.999969	1	0	0.071375	93	0.071375	0.071375	1.51E-09	1	2	DG8S277	1	INVSNP
0.999969	1	0	0.165184	93	0.165184	0.165184	1.49E-09	1	2	DG8S277	2	INVSNP
0.999969	1	0	0.040712	93	0.040712	0.040712	1.50E-09	1	8	DG8S277	1	INVSNP
0.999969	1	0	0.007675	93	0.007675	0.007675	1.50E-09	1	8	DG8S277	2	INVSNP
0.999969	1	0	0.010753	93	0.010753	0.010753	1.51E-09	1	4	DG8S277	2	INVSNP
0.999969	1	0	0.005376	93	0.005376	0.005376	1.51E-09	1	-4	DG8S277	1	INVSNP
0.999969	1	0	0.005376	93	0.005376	0.005376	1.51E-09	1	6	DG8S277	2	INVSNP

FIG. 11B8

0.999969	1	0	0.012148	93	0.012148	0.012148	1.50E-09	1	12	DG8S277	1	INVSNP
0.999969	1	0	0.003981	93	0.003981	0.003982	1.50E-09	1	12	DG8S277	2	INVSNP
0.999985	1	0	0.429556	116	0.429556	0.429557	3.65E-10	1	0	DG8S285	1	INVSNP
0.999984	1	0	0.186823	116	0.186823	0.186823	3.96E-10	1	0	DG8S285	2	INVSNP
0.999984	1	0	0.158946	116	0.158946	0.158946	3.81E-10	1	2	DG8S285	1	INVSNP
0.999984	1	0	0.151399	116	0.151399	0.151399	3.81E-10	1	2	DG8S285	2	INVSNP
0.999984	1	0	0.045119	116	0.045119	0.045119	4.01E-10	1	1	DG8S285	1	INVSNP
0.999984	1	0	0.015226	116	0.015226	0.015226	3.88E-10	1	1	DG8S285	2	INVSNP
0.999984	1	0	0.012931	116	0.012931	0.012931	4.04E-10	1	-1	DG8S285	1	INVSNP
0.999999	1	0	0.436406	105	0.436406	0.436406	4.55E-13	1	0	DG8S291	1	INVSNP
0.999999	1	0	0.130261	105	0.130261	0.130261	5.68E-13	1	0	DG8S291	2	INVSNP
0.999999	1	0	0.052381	105	0.052381	0.052381	4.55E-13	1	-2	DG8S291	2	INVSNP
1	1	0	0.123579	105	0.123579	0.123579	3.41E-13	1	4	DG8S291	1	INVSNP
0.999999	1	0	0.081183	105	0.081183	0.081183	4.55E-13	1	4	DG8S291	2	INVSNP
1	1	0	0.063824	105	0.063824	0.063824	1.14E-13	1	2	DG8S291	1	INVSNP
1	1	0	0.093319	105	0.093319	0.093319	1.14E-13	1	2	DG8S291	2	INVSNP
0.999999	1	0	0.019048	105	0.019048	0.019048	4.55E-13	1	6	DG8S291	2	INVSNP
0.999935	1	0	0.409193	124	0.409193	0.409194	6.55E-09	1	2	DG8S292	1	INVSNP
0.999936	1	0	0.308549	124	0.308549	0.308548	6.52E-09	1	2	DG8S292	2	INVSNP
0.999936	1	0	0.231936	124	0.231936	0.231935	6.53E-09	1	0	DG8S292	1	INVSNP
0.999936	1	0	0.050322	124	0.050322	0.050323	6.53E-09	1	0	DG8S292	2	INVSNP
0.999983	1	0	0.100223	111	0.100223	0.100223	4.49E-10	1	12	DG8S297	1	INVSNP
0.999983	1	0	0.115994	111	0.115994	0.115994	4.34E-10	1	12	DG8S297	2	INVSNP
0.999983	1	0	0.391988	111	0.391988	0.391988	4.46E-10	1	0	DG8S297	1	INVSNP
0.999983	1	0	0.026931	111	0.026931	0.026931	4.31E-10	1	0	DG8S297	2	INVSNP
0.999983	1	0	0.009139	111	0.009139	0.009139	4.34E-10	1	4	DG8S297	1	INVSNP
0.999983	1	0	0.094464	111	0.094464	0.094464	4.35E-10	1	4	DG8S297	2	INVSNP
0.999983	1	0	0.078894	111	0.078894	0.078894	4.46E-10	1	16	DG8S297	1	INVSNP
0.999983	1	0	0.020205	111	0.020205	0.020205	4.39E-10	1	16	DG8S297	2	INVSNP
0.999983	1	0	0.004515	111	0.004515	0.004515	4.33E-10	1	8	DG8S297	1	INVSNP
0.999983	1	0	0.018008	111	0.018008	0.018008	4.38E-10	1	8	DG8S297	2	INVSNP
0.999983	1	0	0.008503	111	0.008503	0.008503	4.49E-10	1	-4	DG8S297	1	INVSNP
0.999983	1	0	0.005011	111	0.005011	0.005011	4.46E-10	1	-4	DG8S297	2	INVSNP
0.999983	1	0	0.004837	111	0.004837	0.004837	4.49E-10	1	18	DG8S297	1	INVSNP
0.999983	1	0	0.004172	111	0.004172	0.004172	4.49E-10	1	18	DG8S297	2	INVSNP
0.999983	1	0	0.005589	111	0.005589	0.005589	4.41E-10	1	6	DG8S297	1	INVSNP
0.999983	1	0	0.016934	111	0.016934	0.016934	4.46E-10	1	6	DG8S297	2	INVSNP
0.999983	1	0	0.00472	111	0.00472	0.00472	4.49E-10	1	10	DG8S297	1	INVSNP
0.999983	1	0	0.026812	111	0.026812	0.026812	4.49E-10	1	10	DG8S297	2	INVSNP
0.999983	1	0	0.026729	111	0.026729	0.026729	4.39E-10	1	14	DG8S297	1	INVSNP
0.999983	1	0	0.03183	111	0.03183	0.03183	4.40E-10	1	14	DG8S297	2	INVSNP
0.999983	1	0	0.004505	111	0.004505	0.004505	4.49E-10	1	-2	DG8S297	1	INVSNP
1	1	0	0.469828	116	0.469828	0.469828	0	1	0	DG8S298	1	INVSNP
1	1	0	0.340517	116	0.340517	0.340517	0	1	0	DG8S298	2	INVSNP
1	1	0	0.172414	116	0.172414	0.172414	0	1	2	DG8S298	1	INVSNP
1	1	0	0.017241	116	0.017241	0.017241	0	1	1	DG8S298	1	INVSNP
0.99998	1	0	0.529405	117	0.529405	0.529404	6.31E-10	1	0	DG8S301	1	INVSNP
0.99998	1	0	0.26974	117	0.26974	0.269741	6.60E-10	1	0	DG8S301	2	INVSNP
0.999979	1	0	0.107347	117	0.107347	0.107348	6.65E-10	1	1	DG8S301	1	INVSNP
0.999979	1	0	0.093508	117	0.093508	0.093507	6.65E-10	1	1	DG8S301	2	INVSNP
1	1	0	0.285622	117	0.285622	0.285622	1.14E-13	1	26	DG8S302	1	INVSNP
1	1	0	0.120361	117	0.120361	0.120361	1.14E-13	1	26	DG8S302	2	INVSNP
1	1	0	0.141026	117	0.141026	0.141026	0	1	24	DG8S302	1	INVSNP
1	1	0	0.09472	117	0.09472	0.09472	-2.27E-13	1	28	DG8S302	1	INVSNP
1	1	0	0.174511	117	0.174511	0.174511	1.14E-13	1	28	DG8S302	2	INVSNP
1	1	0	0.051282	117	0.051282	0.051282	0	1	30	DG8S302	2	INVSNP
1	1	0	0.132479	117	0.132479	0.132479	0	1	0	DG8S302	1	INVSNP
0.999995	1	0	0.41528	125	0.41528	0.41528	3.34E-11	1	2	DG8S303	1	INVSNP
0.999995	1	0	0.30072	125	0.30072	0.30072	3.19E-11	1	2	DG8S303	2	INVSNP
0.999995	1	0	0.004	125	0.004	0.004	4.27E-11	1	4	DG8S303	1	INVSNP
0.999996	1	0	0.23272	125	0.23272	0.23272	3.02E-11	1	-2	DG8S303	1	INVSNP
0.999995	1	0	0.04728	125	0.04728	0.04728	3.87E-11	1	-2	DG8S303	2	INVSNP
0.999973	1	0	0.097119	56	0.097119	0.097119	1.14E-09	1	0	DG8S307	1	INVSNP
0.999973	1	0	0.081453	56	0.081453	0.081453	1.14E-09	1	0	DG8S307	2	INVSNP
0.999973	1	0	0.478121	56	0.478121	0.47812	1.11E-09	1	4	DG8S307	1	INVSNP
0.999973	1	0	0.182593	56	0.182593	0.182594	1.14E-09	1	4	DG8S307	2	INVSNP
0.999973	1	0	0.07067	56	0.07067	0.07067	1.14E-09	1	-4	DG8S307	1	INVSNP
0.999973	1	0	0.018616	56	0.018616	0.018616	1.14E-09	1	-4	DG8S307	2	INVSNP
0.999973	1	0	0.041591	56	0.041591	0.041591	1.14E-09	1	8	DG8S307	1	INVSNP
0.999973	1	0	0.029838	56	0.029838	0.029838	1.14E-09	1	8	DG8S307	2	INVSNP
0.999995	1	0	0.397395	102	0.397395	0.397395	3.68E-11	1	0	DG8S308	1	INVSNP
0.999996	1	0	0.21535	102	0.21535	0.21535	3.06E-11	1	0	DG8S308	2	INVSNP
0.999995	1	0	0.122939	102	0.122939	0.122939	3.81E-11	1	2	DG8S308	1	INVSNP
0.999996	1	0	0.063335	102	0.063335	0.063335	3.09E-11	1	2	DG8S308	2	INVSNP
0.999994	1	0	0.040007	102	0.040007	0.040007	5.12E-11	1	-14	DG8S308	1	INVSNP
0.999994	1	0	0.067836	102	0.067836	0.067836	5.24E-11	1	-14	DG8S308	2	INVSNP
0.999994	1	0	0.027894	102	0.027894	0.027894	5.39E-11	1	-4	DG8S308	1	INVSNP
0.999994	1	0	0.011321	102	0.011321	0.011321	5.29E-11	1	-4	DG8S308	2	INVSNP
0.999994	1	0	0.029412	102	0.029412	0.029412	5.51E-11	1	-6	DG8S308	1	INVSNP
0.999994	1	0	0.004902	102	0.004902	0.004902	5.51E-11	1	-2	DG8S308	2	INVSNP
0.999994	1	0	0.019608	102	0.019608	0.019608	5.51E-11	1	4	DG8S308	1	INVSNP
1	1	0	0.010753	93	0.010753	0.010753	2.27E-13	1	8	DG8S316	1	INVSNP
1	1	0	0.341125	93	0.341125	0.341125	1.14E-13	1	10	DG8S316	1	INVSNP

FIG. 11B9

1	1	0	0.008338	93	0.008338	0.008338	0	1	10	DG8S316	2	INVSNP
1	1	0	0.090976	93	0.090976	0.090976	-1.14E-13	1	0	DG8S316	1	INVSNP
1	1	0	0.274616	93	0.274616	0.274616	2.27E-13	1	0	DG8S316	2	INVSNP
1	1	0	0.07174	93	0.07174	0.07174	-1.14E-13	1	12	DG8S316	1	INVSNP
1	1	0	0.019658	93	0.019658	0.019658	0	1	12	DG8S316	2	INVSNP
1	1	0	0.125192	93	0.125192	0.125192	1.14E-13	1	14	DG8S316	1	INVSNP
1	1	0	0.036098	93	0.036098	0.036098	0	1	14	DG8S316	2	INVSNP
1	1	0	0.021505	93	0.021505	0.021505	2.27E-13	1	16	DG8S316	1	INVSNP
1	1	0	0.358222	96	0.358222	0.358222	0	1	2	DG8S322	1	INVSNP
1	1	0	0.094903	96	0.094903	0.094903	0	1	2	DG8S322	2	INVSNP
1	1	0	0.015625	96	0.015625	0.015625	0	1	10	DG8S322	1	INVSNP
1	1	0	0.063653	96	0.063653	0.063653	-1.14E-13	1	0	DG8S322	1	INVSNP
1	1	0	0.259263	96	0.259263	0.259263	1.14E-13	1	0	DG8S322	2	INVSNP
1	1	0	0.145833	96	0.145833	0.145833	0	1	4	DG8S322	1	INVSNP
1	1	0	0.0625	96	0.0625	0.0625	0	1	6	DG8S322	1	INVSNP
0.999954	1	0	0.427397	100	0.427397	0.427398	3.30E-09	1	0	DG8S323	1	INVSNP
0.999954	1	0	0.262604	100	0.262604	0.262602	3.34E-09	1	0	DG8S323	2	INVSNP
0.999954	1	0	0.252603	100	0.252603	0.252602	3.30E-09	1	5	DG8S323	1	INVSNP
0.999954	1	0	0.057397	100	0.057397	0.057398	3.32E-09	1	5	DG8S323	2	INVSNP
0.998918	1	0	0.115522	104	0.115522	0.115523	1.84E-06	1	0	DG8S324	1	INVSNP
0.998918	1	0	0.19217	104	0.19217	0.192169	1.84E-06	1	0	DG8S324	2	INVSNP
0.998918	1	0	0.009615	104	0.009615	0.009615	1.84E-06	1	10	DG8S324	2	INVSNP
0.998918	1	0	0.093586	104	0.093586	0.093586	1.84E-06	1	8	DG8S324	1	INVSNP
0.998918	1	0	0.098722	104	0.098722	0.098722	1.84E-06	1	8	DG8S324	2	INVSNP
0.998918	1	0	0.096154	104	0.096154	0.096154	1.84E-06	1	6	DG8S324	1	INVSNP
0.998919	1	0	0.124015	104	0.124015	0.124008	1.84E-06	1	4	DG8S324	1	INVSNP
0.998919	1	0	0.000985	104	0.000985	0.000992	1.84E-06	1	4	DG8S324	2	INVSNP
0.998918	1	0	0.238992	104	0.238992	0.238998	1.84E-06	1	2	DG8S324	1	INVSNP
0.998918	1	0	0.011008	104	0.011008	0.011002	1.84E-06	1	2	DG8S324	2	INVSNP
0.998918	1	0	0.019231	104	0.019231	0.019231	1.84E-06	1	12	DG8S324	2	INVSNP
0.999689	1	0	0.127469	111	0.127469	0.127469	1.52E-07	1	-4	DG8S332	1	INVSNP
0.999689	1	0	0.052711	111	0.052711	0.052711	1.52E-07	1	-4	DG8S332	2	INVSNP
0.999689	1	0	0.050778	111	0.050778	0.050779	1.52E-07	1	4	DG8S332	1	INVSNP
0.999689	1	0	0.030303	111	0.030303	0.030303	1.52E-07	1	4	DG8S332	2	INVSNP
0.999689	1	0	0.105005	111	0.105005	0.105003	1.52E-07	1	2	DG8S332	1	INVSNP
0.999689	1	0	0.106707	111	0.106707	0.106708	1.52E-07	1	2	DG8S332	2	INVSNP
0.999689	1	0	0.185972	111	0.185972	0.18597	1.52E-07	1	-2	DG8S332	1	INVSNP
0.999689	1	0	0.034749	111	0.034749	0.034751	1.52E-07	1	-2	DG8S332	2	INVSNP
0.999689	1	0	0.114825	111	0.114825	0.114825	1.52E-07	1	0	DG8S332	1	INVSNP
0.999689	1	0	0.137427	111	0.137427	0.137427	1.52E-07	1	0	DG8S332	2	INVSNP
0.999689	1	0	0.017069	111	0.017069	0.017069	1.52E-07	1	-6	DG8S332	1	INVSNP
0.999689	1	0	0.005454	111	0.005454	0.005454	1.52E-07	1	-6	DG8S332	2	INVSNP
0.999689	1	0	0.029513	111	0.029513	0.029516	1.52E-07	1	6	DG8S332	1	INVSNP
0.999688	1	0	0.002018	111	0.002018	0.002016	1.53E-07	1	6	DG8S332	2	INVSNP
0.999997	1	0	0.282444	101	0.282444	0.282444	1.27E-11	1	-5	DG8S333	1	INVSNP
0.999999	1	0	0.024487	101	0.024487	0.024487	1.53E-12	1	-5	DG8S333	2	INVSNP
0.999997	1	0	0.366071	101	0.366071	0.366071	1.30E-11	1	0	DG8S333	1	INVSNP
0.999997	1	0	0.326998	101	0.326998	0.326998	1.30E-11	1	0	DG8S333	2	INVSNP
0.999993	1	0	0.354923	125	0.354923	0.354923	6.87E-11	1	1	SG08S100	1	INVSNP
0.999993	1	0	0.065077	125	0.065077	0.065078	8.66E-11	1	1	SG08S100	2	INVSNP
0.999994	1	0	0.285077	125	0.285077	0.285077	6.59E-11	1	2	SG08S100	1	INVSNP
0.999993	1	0	0.294923	125	0.294923	0.294923	6.65E-11	1	2	SG08S100	2	INVSNP
0.999999	1	0	0.508186	119	0.508186	0.508186	1.71E-12	1	1	SG08S102	1	INVSNP
1	1	0	0.025427	119	0.025427	0.025427	3.41E-13	1	1	SG08S102	2	INVSNP
0.999999	1	0	0.155679	119	0.155679	0.155679	1.53E-12	1	2	SG08S102	1	INVSNP
0.999999	1	0	0.310707	119	0.310707	0.310707	1.65E-12	1	2	SG08S102	2	INVSNP
0.99996	1	0	0.501608	123	0.501608	0.501607	2.49E-09	1	0	SG08S112	1	INVSNP
0.99996	1	0	0.209774	123	0.209774	0.209775	2.48E-09	1	0	SG08S112	2	INVSNP
0.99996	1	0	0.152864	123	0.152864	0.152865	2.49E-09	1	2	SG08S112	1	INVSNP
0.99996	1	0	0.135754	123	0.135754	0.135753	2.49E-09	1	2	SG08S112	2	INVSNP
1	1	0	0.567195	124	0.567195	0.567195	0	1	0	SG08S120	1	INVSNP
1	1	0	0.053773	124	0.053773	0.053773	0	1	0	SG08S120	2	INVSNP
1	1	0	0.094096	124	0.094096	0.094096	0	1	2	SG08S120	1	INVSNP
1	1	0	0.284937	124	0.284937	0.284937	0	1	2	SG08S120	2	INVSNP
0.999997	1	0	0.608234	122	0.608234	0.608234	9.89E-12	1	0	SG08S138	1	INVSNP
0.999998	1	0	0.137668	122	0.137668	0.137668	8.41E-12	1	0	SG08S138	2	INVSNP
0.999999	1	0	0.039307	122	0.039307	0.039307	3.01E-12	1	2	SG08S138	1	INVSNP
0.999998	1	0	0.214791	122	0.214791	0.214791	9.27E-12	1	2	SG08S138	2	INVSNP
0.999999	1	0	0.524172	126	0.524172	0.524172	1.36E-12	1	0	SG08S15	1	INVSNP
0.999999	1	0	0.055194	126	0.055194	0.055194	4.55E-13	1	0	SG08S15	2	INVSNP
0.999999	1	0	0.126622	126	0.126622	0.126622	1.14E-12	1	2	SG08S15	1	INVSNP
0.999999	1	0	0.294013	126	0.294013	0.294013	1.25E-12	1	2	SG08S15	2	INVSNP
0.999998	1	0	0.10833	124	0.10833	0.10833	6.03E-12	1	0	SG08S26	1	INVSNP
0.999998	1	0	0.294896	124	0.294896	0.294896	7.96E-12	1	0	SG08S26	2	INVSNP
0.999998	1	0	0.540864	124	0.540864	0.540864	8.30E-12	1	2	SG08S26	1	INVSNP
0.999999	1	0	0.055911	124	0.055911	0.055911	3.41E-12	1	2	SG08S26	2	INVSNP
0.999999	1	0	0.111247	124	0.111247	0.111247	2.16E-12	1	2	SG08S27	1	INVSNP
0.999999	1	0	0.296011	124	0.296011	0.296011	2.61E-12	1	2	SG08S27	2	INVSNP
0.999999	1	0	0.546011	124	0.546011	0.546011	2.61E-12	1	1	SG08S27	1	INVSNP
0.999999	1	0	0.046731	124	0.046731	0.046731	1.02E-12	1	1	SG08S27	2	INVSNP
0.999999	1	0	0.585373	125	0.585373	0.585373	5.12E-13	1	1	SG08S32	1	INVSNP
0.999999	1	0	0.078627	125	0.078627	0.078627	3.98E-13	1	1	SG08S32	2	INVSNP
1	1	0	0.070627	125	0.070627	0.070627	2.84E-13	1	0	SG08S32	1	INVSNP

FIG. 11B10

0.999999	1	0	0.265373	125	0.265373	0.265373	5.12E-13	1	0	SG08S32	2	INVSNP
0.999984	1	0	0.287643	123	0.287643	0.287644	3.84E-10	1	1	SG08S35	1	INVSNP
0.999984	1	0	0.313983	123	0.313983	0.313982	3.83E-10	1	1	SG08S35	2	INVSNP
0.999984	1	0	0.358698	123	0.358698	0.358698	4.10E-10	1	2	SG08S35	1	INVSNP
0.999984	1	0	0.039676	123	0.039676	0.039676	3.97E-10	1	2	SG08S35	2	INVSNP
0.999994	1	0	0.465755	102	0.465755	0.465755	5.03E-11	1	1	SG08S39	1	INVSNP
0.999994	1	0	0.058754	102	0.058754	0.058754	5.71E-11	1	1	SG08S39	2	INVSNP
0.999995	1	0	0.205813	102	0.205813	0.205813	4.40E-11	1	0	SG08S39	1	INVSNP
0.999995	1	0	0.269677	102	0.269677	0.269677	4.71E-11	1	0	SG08S39	2	INVSNP
0.999958	1	0	0.320118	121	0.320118	0.320117	2.75E-09	1	0	SG08S42	1	INVSNP
0.999958	1	0	0.072444	121	0.072444	0.072445	2.76E-09	1	0	SG08S42	2	INVSNP
0.999958	1	0	0.332774	121	0.332774	0.332776	2.78E-09	1	2	SG08S42	1	INVSNP
0.999958	1	0	0.274663	121	0.274663	0.274663	2.76E-09	1	2	SG08S42	2	INVSNP
0.99999	1	0	0.046463	116	0.046463	0.046463	1.55E-10	1	1	SG08S46	1	INVSNP
0.99999	1	0	0.044055	116	0.044055	0.044055	1.54E-10	1	1	SG08S46	2	INVSNP
0.999991	1	0	0.604399	116	0.604399	0.604399	1.41E-10	1	3	SG08S46	1	INVSNP
0.999991	1	0	0.305083	116	0.305083	0.305083	1.38E-10	1	3	SG08S46	2	INVSNP
1	1	0	0.583174	123	0.583174	0.583174	0	1	0	SG08S5	1	INVSNP
1	1	0	0.030647	123	0.030647	0.030647	0	1	0	SG08S5	2	INVSNP
1	1	0	0.063167	123	0.063167	0.063167	0	1	2	SG08S5	1	INVSNP
1	1	0	0.323012	123	0.323012	0.323012	-5.68E-14	1	2	SG08S5	2	INVSNP
0.999974	1	0	0.368417	125	0.368417	0.368417	1.05E-09	1	2	SG08S50	1	INVSNP
0.999974	1	0	0.079583	125	0.079583	0.079583	1.06E-09	1	2	SG08S50	2	INVSNP
0.999974	1	0	0.279583	125	0.279583	0.279583	1.05E-09	1	0	SG08S50	1	INVSNP
0.999974	1	0	0.272417	125	0.272417	0.272417	1.05E-09	1	0	SG08S50	2	INVSNP
0.999973	1	0	0.456715	122	0.456715	0.456714	1.12E-09	1	0	SG08S506	1	INVSNP
0.999973	1	0	0.100662	122	0.100662	0.100663	1.12E-09	1	0	SG08S506	2	INVSNP
0.999973	1	0	0.199023	122	0.199023	0.199023	1.11E-09	1	2	SG08S506	1	INVSNP
0.999973	1	0	0.2436	122	0.2436	0.2436	1.11E-09	1	2	SG08S506	2	INVSNP
0.999969	1	0	0.398835	126	0.398835	0.398835	1.50E-09	1	2	SG08S507	1	INVSNP
0.999969	1	0	0.0218	126	0.0218	0.0218	1.50E-09	1	2	SG08S507	2	INVSNP
0.999969	1	0	0.251958	126	0.251958	0.251959	1.49E-09	1	3	SG08S507	1	INVSNP
0.999969	1	0	0.327407	126	0.327407	0.327406	1.49E-09	1	3	SG08S507	2	INVSNP
0.999986	1	0	0.452263	121	0.452263	0.452262	3.21E-10	1	1	SG08S508	1	INVSNP
0.999986	1	0	0.027076	121	0.027076	0.027077	3.19E-10	1	1	SG08S508	2	INVSNP
0.999986	1	0	0.213027	121	0.213027	0.213027	3.13E-10	1	3	SG08S508	1	INVSNP
0.999986	1	0	0.307634	121	0.307634	0.307634	3.14E-10	1	3	SG08S508	2	INVSNP
0.99999	1	0	0.431315	117	0.431315	0.431315	1.48E-10	1	1	SG08S510	1	INVSNP
0.99999	1	0	0.320821	117	0.320821	0.320821	1.47E-10	1	1	SG08S510	2	INVSNP
0.99999	1	0	0.239625	117	0.239625	0.239625	1.45E-10	1	0	SG08S510	1	INVSNP
0.999991	1	0	0.008238	117	0.008238	0.008238	1.37E-10	1	0	SG08S510	2	INVSNP
0.999986	1	0	0.122008	104	0.122008	0.122008	3.28E-10	1	1	SG08S511	1	INVSNP
0.999986	1	0	0.233761	104	0.233761	0.233761	2.98E-10	1	1	SG08S511	2	INVSNP
0.999987	1	0	0.531838	104	0.531838	0.531838	2.51E-10	1	3	SG08S511	1	INVSNP
0.999986	1	0	0.112392	104	0.112392	0.112393	3.27E-10	1	3	SG08S511	2	INVSNP
0.999983	1	0	0.11373	122	0.11373	0.113731	4.47E-10	1	2	SG08S512	1	INVSNP
0.999983	1	0	0.23463	122	0.23463	0.23463	4.44E-10	1	2	SG08S512	2	INVSNP
0.999983	1	0	0.542007	122	0.542007	0.542007	4.39E-10	1	1	SG08S512	1	INVSNP
0.999983	1	0	0.109632	122	0.109632	0.109632	4.47E-10	1	1	SG08S512	2	INVSNP
0.999998	1	0	0.503891	118	0.503891	0.503891	3.98E-12	1	1	SG08S517	1	INVSNP
0.999999	1	0	0.02577	118	0.02577	0.02577	6.82E-13	1	1	SG08S517	2	INVSNP
0.999998	1	0	0.152889	118	0.152889	0.152889	3.58E-12	1	3	SG08S517	1	INVSNP
0.999998	1	0	0.31745	118	0.31745	0.31745	3.92E-12	1	3	SG08S517	2	INVSNP
0.999989	1	0	0.210076	123	0.210076	0.210076	1.74E-10	1	1	SG08S520	1	INVSNP
0.99999	1	0	0.310249	123	0.310249	0.310249	1.52E-10	1	1	SG08S520	2	INVSNP
0.99999	1	0	0.452526	123	0.452526	0.452526	1.55E-10	1	0	SG08S520	1	INVSNP
0.999989	1	0	0.027149	123	0.027149	0.027149	1.74E-10	1	0	SG08S520	2	INVSNP
0.999993	1	0	0.610402	122	0.610402	0.610402	7.37E-11	1	2	SG08S6	1	INVSNP
0.999993	1	0	0.16009	122	0.16009	0.16009	8.69E-11	1	2	SG08S6	2	INVSNP
0.999993	1	0	0.045336	122	0.045336	0.045336	8.67E-11	1	0	SG08S6	1	INVSNP
0.999993	1	0	0.184172	122	0.184172	0.184172	8.66E-11	1	0	SG08S6	2	INVSNP
0.999999	1	0	0.503969	120	0.503969	0.503969	1.59E-12	1	1	SG08S70	1	INVSNP
1	1	0	0.025198	120	0.025198	0.025198	2.27E-13	1	1	SG08S70	2	INVSNP
0.999999	1	0	0.154365	120	0.154365	0.154365	1.36E-12	1	3	SG08S70	1	INVSNP
0.999999	1	0	0.316469	120	0.316469	0.316469	1.59E-12	1	3	SG08S70	2	INVSNP
0.999999	1	0	0.146941	119	0.146941	0.146941	4.55E-13	1	0	SG08S71	1	INVSNP
0.999999	1	0	0.323647	119	0.323647	0.323647	4.55E-13	1	0	SG08S71	2	INVSNP
0.999999	1	0	0.504319	119	0.504319	0.504319	4.55E-13	1	2	SG08S71	1	INVSNP
1	1	0	0.025092	119	0.025092	0.025092	1.14E-13	1	2	SG08S71	2	INVSNP
0.999997	1	0	0.499413	117	0.499413	0.499413	1.16E-11	1	3	SG08S73	1	INVSNP
0.999999	1	0	0.026228	117	0.026228	0.026228	2.22E-12	1	3	SG08S73	2	INVSNP
0.999997	1	0	0.154433	117	0.154433	0.154433	1.03E-11	1	1	SG08S73	1	INVSNP
0.999997	1	0	0.319926	117	0.319926	0.319926	1.14E-11	1	1	SG08S73	2	INVSNP
0.999998	1	0	0.468698	120	0.468698	0.468698	5.00E-12	1	1	SG08S76	1	INVSNP
1	1	0	0.010469	120	0.010469	0.010469	2.27E-13	1	1	SG08S76	2	INVSNP
0.999998	1	0	0.185469	120	0.185469	0.185469	4.89E-12	1	2	SG08S76	1	INVSNP
0.999998	1	0	0.335365	120	0.335365	0.335365	4.89E-12	1	2	SG08S76	2	INVSNP
0.999978	1	0	0.447056	122	0.447056	0.447056	7.54E-10	1	0	SG08S90	1	INVSNP
0.999978	1	0	0.093928	122	0.093928	0.093928	7.58E-10	1	0	SG08S90	2	INVSNP
0.999978	1	0	0.208682	122	0.208682	0.208682	7.52E-10	1	1	SG08S90	1	INVSNP
0.999978	1	0	0.250335	122	0.250335	0.250334	7.48E-10	1	1	SG08S90	2	INVSNP
0.999946	1	0	0.557371	130	0.557371	0.55737	4.59E-09	1	1	SG08S93	1	INVSNP

FIG. 11B11

0.999946	1	0	0.265705	130	0.265705	0.265707	4.63E-09	1	1	SG08S93	2	INVSNP
0.999946	1	0	0.088782	130	0.088782	0.088784	4.63E-09	1	2	SG08S93	1	INVSNP
0.999946	1	0	0.088141	130	0.088141	0.088139	4.63E-09	1	2	SG08S93	2	INVSNP
0.999936	1	0	0.316819	112	0.316819	0.316819	6.35E-09	1	0	SG08S94	1	INVSNP
0.999936	1	0	0.009074	112	0.009074	0.009074	6.34E-09	1	0	SG08S94	2	INVSNP
0.999936	1	0	0.357288	112	0.357288	0.357289	6.35E-09	1	2	SG08S94	1	INVSNP
0.999936	1	0	0.316819	112	0.316819	0.316819	6.35E-09	1	2	SG08S94	2	INVSNP
1	1	0	0.061731	101	0.061731	0.061731	5.68E-14	1	2	SG08S95	1	INVSNP
1	1	0	0.304606	101	0.304606	0.304606	5.68E-14	1	2	SG08S95	2	INVSNP
1	1	0	0.601636	101	0.601636	0.601636	1.14E-13	1	3	SG08S95	1	INVSNP
1	1	0	0.032028	101	0.032028	0.032028	5.68E-14	1	3	SG08S95	2	INVSNP
0.99999	1	0	0.261511	114	0.261511	0.261511	1.46E-10	1	2	SG08S96	1	INVSNP
0.99999	1	0	0.277963	114	0.277963	0.277963	1.47E-10	1	2	SG08S96	2	INVSNP
0.99999	1	0	0.396384	114	0.396384	0.396384	1.57E-10	1	3	SG08S96	1	INVSNP
0.999991	1	0	0.064142	114	0.064142	0.064142	1.38E-10	1	3	SG08S96	2	INVSNP
0.999912	1	0	0.595743	129	0.595743	0.595742	1.21E-08	1	0	SG08S97	1	INVSNP
0.999912	1	0	0.311233	129	0.311233	0.311235	1.21E-08	1	0	SG08S97	2	INVSNP
0.999912	1	0	0.051543	129	0.051543	0.051545	1.21E-08	1	1	SG08S97	1	INVSNP
0.999912	1	0	0.04148	129	0.04148	0.041478	1.21E-08	1	1	SG08S97	2	INVSNP

FIG. 11B12

Appendix 3: Output for association of markers to panic disorder.

P-Value	Relative Risk	Number of Affecteds	Frequency in Affecteds	Number of Controls	Frequency in Controls	Frequency under Null Hypothesis	Chi-square Statistic	Information	Allele	Marker
0.355059	0.910262	286	0.636364	811	0.65783	0.652233	0.855293	1	4	AC022239-5
0.242105	1.1394	286	0.265734	811	0.24106	0.247493	1.3683	1	0	AC022239-5
0.571632	0.902632	286	0.075175	811	0.082614	0.080675	0.319959	1	8	AC022239-5
0.986197	0.992388	286	0.012238	811	0.012331	0.012306	0.000299	1	-4	AC022239-5
0.240092	2.03452	286	0.008741	811	0.004316	0.005469	1.38005	1	-8	AC022239-5
0.960871	0.945126	286	0.001748	811	0.00185	0.001823	0.002407	1	-12	AC022239-5
0.783017	1.05089	228	0.107456	574	0.102787	0.104115	0.075839	1	12	AC068974-2
0.56987	1.07163	228	0.298246	574	0.283972	0.28803	0.3229	1	14	AC068974-2
0.105673	0.833881	228	0.399123	574	0.44338	0.430798	2.61776	1	0	AC068974-2
0.866142	0.954783	228	0.041667	574	0.043554	0.043018	0.028413	1	16	AC068974-2
0.912008	1.03403	228	0.035088	574	0.033972	0.034289	0.012212	1	6	AC068974-2
0.348408	1.22425	228	0.076754	574	0.063589	0.067332	0.879248	1	10	AC068974-2
0.539288	0.627754	228	0.004386	574	0.006969	0.006234	0.376861	1	20	AC068974-2
0.206969	1.75787	228	0.019737	574	0.011324	0.013716	1.5925	1	8	AC068974-2
0.413329	2.87E-10	228	2.50E-13	574	0.000871	0.000623	0.669206	1	15	AC068974-2
0.229492	2.11012	228	0.010965	574	0.005226	0.006858	1.44401	1	18	AC068974-2
0.169771	5.05286	228	0.004386	574	0.000871	0.00187	1.88497	1	2	AC068974-2
0.156357	1.36E-16	228	3.55E-19	574	0.002613	0.00187	2.00911	1	-2	AC068974-2
0.112637	18882.8	228	0.002193	574	1.16E-07	0.000623	2.51683	1	-4	AC068974-2
0.413329	2.87E-10	228	2.50E-13	574	0.000871	0.000623	0.669206	1	13	AC068974-2
0.010326	1.39401	272	0.202206	780	0.153846	0.16635	6.57786	1	0	AF131215-1
0.002527	0.719595	272	0.270221	780	0.339744	0.321768	9.12075	1	2	AF131215-1
0.621042	1.05433	272	0.321691	780	0.310256	0.313213	0.244405	1	-2	AF131215-1
0.401243	0.771187	272	0.023897	780	0.030769	0.028992	0.704598	1	22	AF131215-1
0.397706	1.33952	272	0.023897	780	0.017949	0.019487	0.715251	1	-4	AF131215-1
0.345695	1.24806	272	0.051471	780	0.041667	0.044202	0.889196	1	8	AF131215-1
0.543576	0.870997	272	0.047794	780	0.054487	0.052757	0.368952	1	4	AF131215-1
0.743728	1.14925	272	0.014706	780	0.012821	0.013308	0.106877	1	-6	AF131215-1
0.682444	1.11131	272	0.040441	780	0.036539	0.037548	0.167387	1	10	AF131215-1
0.465938	2.87107	272	0.001838	780	0.000641	0.000951	0.531592	1	6	AF131215-1
0.099946	23085.8	272	0.001838	780	7.98E-08	0.000475	2.70641	1	14	AF131215-1
0.273866	1.28E-11	272	1.65E-14	780	0.001282	0.000951	1.19728	1	12	AF131215-1
0.008381	0.771846	283	0.469965	780	0.534615	0.517404	6.95029	1	0	AF131215-2
0.010287	1.28932	283	0.462898	780	0.400641	0.417215	6.58444	1	4	AF131215-2
0.919253	0.978776	283	0.056537	780	0.057692	0.057385	0.010277	1	8	AF131215-2
0.961099	1.03375	283	0.0053	780	0.005128	0.005174	0.002379	1	-4	AF131215-2
0.223033	2.76553	283	0.0053	780	0.001923	0.002822	1.48475	1	-8	AF131215-2
0.002887	0.743738	292	0.359589	795	0.430189	0.411224	8.87765	1	0	AF131215-4
0.00029	1.4211	292	0.523973	795	0.436478	0.459982	13.134	1	14	AF131215-4
0.323378	0.832763	292	0.068493	795	0.081132	0.077737	0.975234	1	12	AF131215-4
0.626764	0.86546	292	0.025685	795	0.02956	0.028519	0.236475	1	8	AF131215-4
0.80931	0.90625	292	0.013699	795	0.015094	0.014719	0.058234	1	16	AF131215-4
0.367167	1.8207	292	0.006849	795	0.003774	0.0046	0.81323	1	18	AF131215-4
0.553357	0.543741	292	0.001712	795	0.003145	0.00276	0.351338	1	10	AF131215-4
0.428886	1.17E-11	292	7.34E-15	795	0.000629	0.00046	0.625839	1	4	AF131215-4
0.278976	1.2284	291	0.075601	801	0.062422	0.065934	1.17207	1	-6	AF188029-1
0.549532	0.940647	291	0.333333	801	0.347066	0.343407	0.358156	1	0	AF188029-1
0.63296	0.941483	291	0.175258	801	0.184145	0.181777	0.228069	1	-8	AF188029-1
0.325299	1.12325	291	0.221649	801	0.202247	0.207418	0.967521	1	-4	AF188029-1
0.693252	0.897679	291	0.030928	801	0.034332	0.033425	0.155588	1	2	AF188029-1
0.501099	0.815477	291	0.024055	801	0.029338	0.02793	0.452608	1	-12	AF188029-1
0.430539	0.866162	291	0.072165	801	0.082397	0.07967	0.62137	1	-2	AF188029-1
0.292817	1.25018	291	0.060138	801	0.048689	0.05174	1.10663	1	-10	AF188029-1
0.431056	4.83E-13	291	3.02E-16	801	0.000624	0.000458	0.619977	1	6	AF188029-1
0.66378	0.784972	291	0.006873	801	0.008739	0.008242	0.188965	1	4	AF188029-1
0.841551	1.01992	284	0.429577	804	0.424751	0.426011	0.039964	1	0	AF188029-10
0.490415	0.93353	284	0.390845	804	0.407338	0.403033	0.475615	1	2	AF188029-10
0.192955	0.737804	284	0.040493	804	0.054105	0.050552	1.69491	1	8	AF188029-10
0.275572	1.21229	284	0.089789	804	0.075249	0.079044	1.1888	1	4	AF188029-10
0.442342	1.20876	284	0.044014	804	0.036692	0.038603	0.5902	1	-2	AF188029-10
0.110611	4.26372	284	0.005282	804	0.001244	0.002298	2.54547	1	-4	AF188029-10
0.436617	1.50E-13	284	9.32E-17	804	0.000622	0.00046	0.605157	1	6	AF188029-10
0.678161	0.947682	286	0.167832	795	0.175472	0.173451	0.172203	1	0	AF188029-12
0.927278	0.983654	286	0.078671	795	0.079874	0.079556	0.00833	1	4	AF188029-12
0.842697	1.01971	286	0.566434	795	0.561635	0.562905	0.03938	1	-12	AF188029-12
0.521834	1.08748	286	0.171329	795	0.159748	0.162812	0.410266	1	-4	AF188029-12
0.333271	0.396047	286	0.001748	795	0.004403	0.0037	0.938147	1	12	AF188029-12
0.277654	0.644248	286	0.012238	795	0.018868	0.017114	1.17854	1	8	AF188029-12

FIG. 11C1

0.102875	28555.1	286	0.001748	795	6.13E-08	0.000463	2.66039	1	-8	AF188029-12
0.155568	0.870053	287	0.550523	809	0.584672	0.57573	2.01678	1	0	AF188029-7
0.140992	1.15655	287	0.425087	809	0.389988	0.399179	2.1671	1	-4	AF188029-7
0.991319	0.994821	287	0.010453	809	0.010507	0.010493	0.000118	1	2	AF188029-7
0.903051	0.939073	287	0.008711	809	0.009271	0.009124	0.014837	1	-2	AF188029-7
0.482678	1.69491	287	0.005226	809	0.00309	0.00365	0.492806	1	4	AF188029-7
0.118913	3.56E-12	287	8.83E-15	809	0.002472	0.001825	2.43158	1	6	AF188029-7
0.094813	1.22612	192	0.528646	449	0.477728	0.49298	2.7907	1	0	AF287957-1
0.007629	0.710316	192	0.315104	449	0.393096	0.369735	7.11845	1	-6	AF287957-1
0.186793	1.67173	192	0.03125	449	0.018931	0.022621	1.74273	1	4	AF287957-1
0.984991	0.994856	192	0.052083	449	0.052339	0.052262	0.000354	1	-4	AF287957-1
0.425166	1.36433	192	0.028646	449	0.021158	0.023401	0.635992	1	2	AF287957-1
0.927059	1.04019	192	0.020833	449	0.020045	0.020281	0.008381	1	-2	AF287957-1
0.424721	1.4128	192	0.023438	449	0.016704	0.018721	0.637216	1	-14	AF287957-1
0.037716	1.56804	295	0.061017	867	0.039792	0.045181	4.31781	1	-12	D8S1130
0.823345	1.02491	295	0.250847	867	0.246251	0.247418	0.049838	1	4	D8S1130
0.057993	0.78598	295	0.155932	867	0.190311	0.181583	3.59388	1	0	D8S1130
0.034226	0.686966	295	0.067797	867	0.095732	0.08864	4.48339	1	8	D8S1130
0.761102	1.03496	295	0.233898	867	0.227797	0.229346	0.092437	1	-8	D8S1130
0.448628	1.10294	295	0.167797	867	0.154556	0.157917	0.574117	1	-4	D8S1130
0.015013	1.73607	295	0.057627	867	0.034025	0.040017	5.915	1	12	D8S1130
0.257109	0.516182	295	0.005085	867	0.009804	0.008606	1.28426	1	16	D8S1130
0.184815	1.73E-13	295	3.00E-16	867	0.00173	0.001291	1.75847	1	2	D8S1130
0.926708	0.989884	272	0.273897	839	0.275924	0.275428	0.008462	1	0	D8S1469
0.42014	1.0829	272	0.485294	839	0.465435	0.470297	0.649923	1	4	D8S1469
0.912414	0.984828	272	0.147059	839	0.148987	0.148515	0.012099	1	8	D8S1469
0.350505	0.614075	272	0.007353	839	0.011919	0.010801	0.871627	1	12	D8S1469
0.662057	0.911314	272	0.055147	839	0.060191	0.058956	0.191034	1	3	D8S1469
0.219897	0.700217	272	0.025735	839	0.036353	0.033753	1.50504	1	-4	D8S1469
0.091711	4.64693	272	0.005515	839	0.001192	0.00225	2.84409	1	7	D8S1469
0.146999	0.867007	277	0.436823	845	0.472189	0.463458	2.10312	1	0	D8S1695
0.545903	0.931486	277	0.218412	845	0.230769	0.227718	0.364708	1	8	D8S1695
0.00817	1.5987	277	0.099278	845	0.064497	0.073084	6.99575	1	6	D8S1695
0.255984	1.25064	277	0.072202	845	0.05858	0.061943	1.29035	1	10	D8S1695
0.931404	1.01321	277	0.117329	845	0.115976	0.11631	0.00741	1	4	D8S1695
0.664068	1.1391	277	0.028881	845	0.025444	0.026292	0.18882	1	12	D8S1695
0.63463	0.844568	277	0.018051	845	0.021302	0.020499	0.225834	1	2	D8S1695
0.235922	0.337754	277	0.001805	845	0.005325	0.004456	1.4048	1	14	D8S1695
0.046136	1.36E-16	277	5.65E-19	845	0.004142	0.003119	3.97662	1	16	D8S1695
0.030127	6.13816	277	0.00722	845	0.001183	0.002674	4.70202	1	-4	D8S1695
0.45137	5.64E-13	277	3.34E-16	845	0.000592	0.000446	0.567209	1	9	D8S1695
0.227457	0.883872	275	0.218182	643	0.244168	0.236383	1.45669	1	34	D8S1721
0.509906	1.17748	275	0.047273	643	0.040436	0.042484	0.434261	1	36	D8S1721
0.084607	1.19418	275	0.450909	643	0.407465	0.420479	2.9741	1	0	D8S1721
0.157396	0.796563	275	0.103636	643	0.12675	0.119826	1.99907	1	2	D8S1721
0.520753	1.11465	275	0.105455	643	0.095645	0.098584	0.412403	1	4	D8S1721
0.871348	0.934318	275	0.014546	643	0.015552	0.015251	0.026227	1	8	D8S1721
0.63747	1.12791	275	0.043636	643	0.03888	0.040305	0.222066	1	24	D8S1721
0.309831	0.581501	275	0.007273	643	0.012442	0.010893	1.0314	1	32	D8S1721
0.128123	0.357385	275	0.003636	643	0.010109	0.00817	2.3151	1	38	D8S1721
0.058961	1.53E-11	275	5.98E-14	643	0.003888	0.002723	3.56636	1	26	D8S1721
0.553668	2.34062	275	0.001818	643	0.000778	0.001089	0.350787	1	6	D8S1721
0.553668	2.34062	275	0.001818	643	0.000778	0.001089	0.350787	1	-4	D8S1721
0.825536	0.778996	275	0.001818	643	0.002333	0.002179	0.04859	1	30	D8S1721
0.398669	9.73E-12	275	7.57E-15	643	0.000778	0.000545	0.712338	1	-2	D8S1721
0.652897	0.957121	298	0.607383	866	0.617783	0.61512	0.202267	1	0	D8S1759
0.102755	0.750017	298	0.07047	866	0.091801	0.08634	2.66225	1	2	D8S1759
0.948028	1.02151	298	0.021812	866	0.021363	0.021478	0.004249	1	6	D8S1759
0.114811	1.34013	298	0.078859	866	0.060046	0.064863	2.48672	1	4	D8S1759
0.140217	1.23237	298	0.139262	866	0.116051	0.121993	2.17557	1	12	D8S1759
0.568174	1.12505	298	0.058725	866	0.05254	0.054124	0.325748	1	10	D8S1759
0.037947	0.33195	298	0.005034	866	0.015012	0.012457	4.30741	1	14	D8S1759
0.031831	0.180252	298	0.001678	866	0.009238	0.007302	4.60758	1	16	D8S1759
0.688492	1.16519	298	0.016779	866	0.014434	0.015034	0.160723	1	8	D8S1759
0.182675	2.05E-13	298	3.56E-16	866	0.001732	0.001289	1.77573	1	-2	D8S1759
0.024789	1.31206	170	0.526471	702	0.458689	0.471904	5.03858	1	0	D8S1825
0.361925	0.80588	170	0.064706	702	0.07908	0.076262	0.831204	1	8	D8S1825
0.379413	1.16728	170	0.144118	702	0.126068	0.129587	0.772604	1	10	D8S1825
0.009957	0.651161	170	0.135294	702	0.193732	0.182339	6.64257	1	6	D8S1825
0.486263	0.868572	170	0.094118	702	0.106838	0.104358	0.484786	1	2	D8S1825
0.191246	2.37586	170	0.011765	702	0.004986	0.006307	1.70799	1	-2	D8S1825
0.870918	1.07863	170	0.017647	702	0.016382	0.016628	0.026404	1	4	D8S1825
0.14054	1.09E-10	170	3.88E-13	702	0.003561	0.002867	2.17204	1	-1	D8S1825
0.454299	0.587491	170	0.005882	702	0.009972	0.009174	0.559903	1	12	D8S1825
0.510105	8.45E-11	170	6.03E-14	702	0.000712	0.000573	0.433851	1	14	D8S1825
0.815552	1.02488	254	0.364173	841	0.358502	0.359817	0.054415	1	4	D8S265
0.451712	1.1091	254	0.167323	841	0.153389	0.156621	0.566353	1	0	D8S265
0.786827	1.10576	254	0.019685	841	0.017836	0.018265	0.073134	1	6	D8S265
0.877551	0.971594	254	0.07874	841	0.080856	0.080365	0.023739	1	-5	D8S265
0.402198	0.886147	254	0.137795	841	0.152794	0.149315	0.701744	1	2	D8S265
0.726358	0.937693	254	0.080709	841	0.085612	0.084475	0.122482	1	18	D8S265
0.364169	1.23268	254	0.055118	841	0.045184	0.047489	0.823464	1	12	D8S265

FIG. 11C2

0.99987	0.999971	254	0.088583	841	0.088585	0.088585	2.65E-08	1	14	D8S265
0.410161	3.31558	254	0.001969	841	0.000595	0.000913	0.678335	1	-3	D8S265
0.00268	3.61E-12	254	3.69E-14	841	0.010107	0.007763	9.01331	1	16	D8S265
0.693624	0.661534	254	0.001968	841	0.002973	0.00274	0.15519	1	8	D8S265
0.208078	7.07E-13	254	1.26E-15	841	0.001784	0.00137	1.58475	1	10	D8S265
0.10975	6.64428	254	0.003937	841	0.000595	0.00137	2.55782	1	20	D8S265
0.46746	4.34E-11	254	2.58E-14	841	0.000595	0.000457	0.527974	1	1	D8S265
0.46746	4.34E-11	254	2.58E-14	841	0.000595	0.000457	0.527974	1	-4	D8S265
0.695468	1.08982	142	0.098592	762	0.091207	0.092367	0.15323	1	0	D8S351
0.783305	1.04473	142	0.211268	762	0.204068	0.205199	0.075633	1	18	D8S351
0.316586	1.16569	142	0.242958	762	0.215879	0.220133	1.003	1	2	D8S351
0.72188	0.937773	142	0.147887	762	0.156168	0.154867	0.126699	1	6	D8S351
0.153706	0.295641	142	0.003521	762	0.011811	0.010509	2.03508	1	10	D8S351
0.838089	1.05	142	0.080986	762	0.077428	0.077987	0.041754	1	8	D8S351
0.583333	0.836945	142	0.038732	762	0.045932	0.044801	0.300878	1	20	D8S351
0.809166	0.940043	142	0.066902	762	0.070866	0.070243	0.058323	1	4	D8S351
0.411157	0.821546	142	0.073944	762	0.088583	0.086283	0.675454	1	16	D8S351
0.756219	1.14178	142	0.024648	762	0.021654	0.022124	0.096379	1	14	D8S351
0.028377	8.33E-12	142	7.72E-14	762	0.009186	0.007743	4.80504	1	12	D8S351
0.796776	0.765774	142	0.003521	762	0.004593	0.004425	0.066318	1	-2	D8S351
0.286161	2.69504	142	0.007042	762	0.002625	0.003319	1.13759	1	22	D8S351
0.14867	1.17553	220	0.372727	825	0.335758	0.343541	2.08584	1	-6	D8S503
0.656591	0.950426	220	0.322727	825	0.333939	0.331579	0.197691	1	0	D8S503
0.952265	1.00854	220	0.172727	825	0.171515	0.17177	0.003584	1	-2	D8S503
0.599769	1.12497	220	0.063636	825	0.05697	0.058373	0.275344	1	-4	D8S503
0.026073	0.443736	220	0.015909	825	0.035152	0.031101	4.95115	1	2	D8S503
0.384947	0.806419	220	0.045455	825	0.055758	0.053589	0.754842	1	-8	D8S503
0.233489	1.31E-11	220	2.36E-14	825	0.001818	0.001435	1.41948	1	-10	D8S503
0.350082	0.415334	220	0.002273	825	0.005455	0.004785	0.873159	1	4	D8S503
0.788203	1.25115	220	0.004545	825	0.003636	0.003828	0.07217	1	-12	D8S503
0.013012	0.789193	299	0.528428	876	0.586758	0.571915	6.16746	1	2	D8S516
0.145759	1.18197	299	0.229097	876	0.200913	0.208085	2.11608	1	4	D8S516
0.521718	1.10737	299	0.102007	876	0.093037	0.095319	0.410496	1	0	D8S516
0.239161	1.20127	299	0.110368	876	0.093607	0.097872	1.38553	1	-2	D8S516
0.621542	1.23675	299	0.013378	876	0.010845	0.011489	0.243707	1	-4	D8S516
0.963144	1.01931	299	0.013378	876	0.013128	0.013192	0.002135	1	6	D8S516
0.476294	1.95638	299	0.003344	876	0.001712	0.002128	0.507337	1	8	D8S516
0.227243	0.879355	277	0.33213	663	0.361237	0.35266	1.45803	1	6	D8S520
0.566855	1.07197	277	0.229242	663	0.217195	0.220745	0.327973	1	8	D8S520
0.591376	0.822135	277	0.018051	663	0.02187	0.020745	0.288201	1	10	D8S520
0.480274	1.11885	277	0.119134	663	0.107843	0.11117	0.498241	1	0	D8S520
0.429167	1.16824	277	0.075812	663	0.085611	0.068617	0.625075	1	-10	D8S520
0.867915	0.97239	277	0.099278	663	0.10181	0.101064	0.027658	1	4	D8S520
0.388307	0.530191	277	0.00361	663	0.006787	0.005851	0.744238	1	-12	D8S520
0.529629	1.10647	277	0.115523	663	0.105581	0.108511	0.395104	1	2	D8S520
0.138097	0.365942	277	0.00361	663	0.009804	0.007979	2.19904	1	-2	D8S520
0.389526	2.39855	277	0.00361	663	0.001508	0.002128	0.740422	1	12	D8S520
0.403311	1.61E-12	277	1.22E-15	663	0.000754	0.000532	0.698432	1	9	D8S520
0.559428	1.0591	276	0.541667	840	0.527381	0.530914	0.340696	1	0	D8S542
0.505598	0.932162	276	0.309783	840	0.325	0.321237	0.443167	1	2	D8S542
0.930924	1.01211	276	0.146739	840	0.145238	0.145609	0.007514	1	4	D8S542
0.191511	1.80E-13	276	3.22E-16	840	0.001788	0.001344	1.70595	1	-2	D8S542
0.442247	3.04718	276	0.001812	840	0.000595	0.000896	0.590446	1	-12	D8S542
0.0859	1.31911	282	0.113475	814	0.088452	0.094891	2.94958	1	-8	D8S550
0.618127	1.07712	282	0.125887	814	0.117936	0.119982	0.248509	1	12	D8S550
0.253091	0.881203	282	0.255319	814	0.280098	0.273723	1.30616	1	14	D8S550
0.940441	0.989607	282	0.141844	814	0.14312	0.142792	0.005582	1	-2	D8S550
0.42232	0.755274	282	0.017731	814	0.023342	0.021898	0.643851	1	8	D8S550
0.373095	1.24145	282	0.046099	814	0.037469	0.03969	0.79333	1	18	D8S550
0.579239	0.897036	282	0.06383	814	0.070639	0.068887	0.307467	1	-6	D8S550
0.912625	0.981032	282	0.085106	814	0.086609	0.086223	0.01204	1	16	D8S550
0.295889	0.798208	282	0.049645	814	0.081425	0.058394	1.09263	1	0	D8S550
0.390233	1.17905	282	0.074468	814	0.063882	0.066606	0.738216	1	10	D8S550
0.020519	8.22E-13	282	4.57E-15	814	0.005528	0.004106	5.36716	1	2	D8S550
0.651301	1.17949	282	0.019504	814	0.016585	0.017336	0.204264	1	20	D8S550
0.769431	1.44405	282	0.001773	814	0.001229	0.001369	0.085919	1	6	D8S550
0.678264	1.44483	282	0.003546	814	0.002457	0.002737	0.172087	1	22	D8S550
0.769431	1.44405	282	0.001773	814	0.001229	0.001369	0.085919	1	4	D8S550
0.002763	0.633735	112	0.491071	391	0.603581	0.578529	8.95765	1	1	DG00AAHBG
0.002763	1.57795	112	0.508929	391	0.396419	0.421471	8.95765	1	2	DG00AAHBG
0.185629	0.845927	180	0.666667	725	0.702759	0.69556	1.75197	1	2	DG00AAHBH
0.185629	1.18213	180	0.333333	725	0.297241	0.30442	1.75197	1	1	DG00AAHBH
0.724399	0.95702	179	0.670391	811	0.680025	0.678283	0.124317	1	3	DG00AAHBI
0.724399	1.04491	179	0.329609	811	0.319975	0.321717	0.124317	1	1	DG00AAHBI
0.145444	1.20675	272	0.226103	531	0.194915	0.205479	2.11939	1	0	DG8S117
0.145444	0.828669	272	0.773897	531	0.805085	0.794521	2.11939	1	9	DG8S117
0.479577	0.889591	292	0.902397	826	0.912228	0.90966	0.499826	1	0	DG8S118
0.479577	1.12411	292	0.097603	826	0.087772	0.09034	0.499826	1	5	DG8S118
0.015453	0.77441	269	0.381041	604	0.442881	0.423826	5.86405	1	0	DG8S127
0.861152	0.972327	269	0.1171	604	0.120033	0.119129	0.030593	1	6	DG8S127
0.007642	1.31953	269	0.501859	604	0.432947	0.454181	7.11552	1	1	DG8S127
0.054739	1.75E-12	269	7.27E-15	604	0.004139	0.002864	3.69001	1	2	DG8S127

FIG. 11C3

0.421283	0.911215	279	0.732975	646	0.750774	0.745405	0.646734	1	0	DG8S128
0.421283	1.09744	279	0.267025	646	0.249226	0.254595	0.646734	1	4	DG8S128
0.214912	1.13351	281	0.402135	772	0.372409	0.380342	1.53803	1	4	DG8S130
0.081276	0.842067	281	0.494662	772	0.537565	0.526116	3.0392	1	0	DG8S130
0.091371	1.50129	281	0.051601	772	0.034974	0.039411	2.85005	1	-16	DG8S130
0.784232	1.13291	281	0.012456	772	0.01101	0.011396	0.074971	1	-4	DG8S130
0.588315	0.863197	281	0.032029	772	0.036917	0.035613	0.292983	1	8	DG8S130
0.913407	0.915475	281	0.003559	772	0.003886	0.003799	0.011825	1	-12	DG8S130
0.799132	1.37433	281	0.001779	772	0.001295	0.001425	0.064755	1	12	DG8S130
0.938767	0.915632	281	0.001779	772	0.001943	0.001899	0.005901	1	-8	DG8S130
0.78588	0.963384	289	0.847751	739	0.852503	0.851167	0.073802	1	0	DG8S134
0.832027	1.02966	289	0.150519	739	0.14682	0.14786	0.044987	1	4	DG8S134
0.514005	2.55979	289	0.00173	739	0.000677	0.000973	0.425906	1	2	DG8S134
0.686497	1.04275	284	0.667254	779	0.657895	0.660395	0.162904	1	0	DG8S136
0.357664	1.17793	284	0.088028	779	0.075738	0.079022	0.84608	1	-6	DG8S136
0.926336	1.02088	284	0.051056	779	0.050064	0.050329	0.008548	1	2	DG8S136
0.012974	0.540184	284	0.03169	779	0.057125	0.050329	6.17261	1	-4	DG8S136
0.670458	1.09089	284	0.06338	779	0.058408	0.059737	0.181067	1	4	DG8S136
0.848922	1.04525	284	0.047535	779	0.045571	0.046096	0.036288	1	6	DG8S136
0.809069	0.931853	284	0.028169	779	0.030167	0.029633	0.058384	1	-2	DG8S136
0.737588	0.87976	284	0.015845	779	0.017972	0.017404	0.112258	1	8	DG8S136
0.077685	1.18E-11	284	3.81E-14	779	0.003209	0.002352	3.11269	1	-8	DG8S136
0.8001	1.37213	284	0.001761	779	0.001284	0.001411	0.064119	1	10	DG8S136
0.148698	5.50183	284	0.003521	779	0.000642	0.001411	2.08556	1	-10	DG8S136
0.937653	0.914156	284	0.001761	779	0.001926	0.001881	0.006118	1	-14	DG8S136
0.707427	0.926264	73	0.308219	234	0.324786	0.320847	0.140861	1	-2	DG8S137
0.420328	1.31212	73	0.09589	234	0.074786	0.079805	0.649397	1	2	DG8S137
0.871564	0.931653	73	0.047945	234	0.051282	0.050489	0.026138	1	10	DG8S137
0.48255	0.785186	73	0.075343	234	0.094017	0.089577	0.493096	1	4	DG8S137
0.534482	1.20249	73	0.123288	234	0.104701	0.109121	0.385863	1	6	DG8S137
0.756498	1.1034	73	0.10274	234	0.094017	0.096091	0.096151	1	-4	DG8S137
0.50781	0.8569	73	0.19863	234	0.224359	0.218241	0.438577	1	0	DG8S137
0.786803	1.20629	73	0.020548	234	0.017094	0.017915	0.073151	1	12	DG8S137
0.707744	1.60689	73	0.006849	234	0.004274	0.004886	0.14054	1	18	DG8S137
0.46096	1.35E-10	73	2.89E-13	234	0.002137	0.001629	0.543562	1	14	DG8S137
0.13978	1.65E-11	73	1.42E-13	234	0.008547	0.006515	2.18038	1	8	DG8S137
0.016338	27512.1	73	0.013697	234	5.05E-07	0.003257	5.76608	1	16	DG8S137
0.089808	32034.3	73	0.006849	234	2.15E-07	0.001629	2.87781	1	20	DG8S137
0.839671	1.03011	280	0.132143	761	0.128778	0.129863	0.040931	1	-1	DG8S138
0.870826	0.976461	280	0.867857	761	0.870565	0.869837	0.026442	1	0	DG8S138
0.428537	2.32E-12	280	1.52E-15	761	0.000657	0.00048	0.626784	1	1	DG8S138
0.159463	1.1614	263	0.437262	585	0.400855	0.412146	1.97931	1	0	DG8S147
0.147986	0.857452	263	0.560837	585	0.598291	0.586675	2.09289	1	2	DG8S147
0.576578	2.22667	263	0.001901	585	0.000855	0.001179	0.3118	1	1	DG8S147
0.259213	0.794127	290	0.056897	694	0.070605	0.066565	1.27296	1	-4	DG8S148
0.545954	0.935049	290	0.265517	694	0.278818	0.274898	0.364615	1	2	DG8S148
0.014561	0.743933	290	0.191379	694	0.241354	0.226626	5.96886	1	-2	DG8S148
0.007095	1.31082	290	0.441379	694	0.376081	0.395325	7.24886	1	0	DG8S148
0.48892	1.2043	290	0.037931	694	0.0317	0.033537	0.478901	1	4	DG8S148
0.001752	23219.6	290	0.006896	694	2.99E-07	0.002033	9.79264	1	6	DG8S148
0.237148	2.65E-11	290	3.83E-14	694	0.001441	0.001016	1.39747	1	-17	DG8S148
0.038856	1.30825	159	0.493711	473	0.427061	0.443829	4.26715	1	-2	DG8S153
0.213023	1.26575	159	0.147799	473	0.120507	0.127373	1.55076	1	0	DG8S153
0.986876	0.991482	159	0.015723	473	0.015856	0.015823	0.000271	1	-6	DG8S153
0.108112	0.569861	159	0.028302	473	0.048626	0.043513	2.5816	1	2	DG8S153
0.00318	0.511599	159	0.069182	473	0.12685	0.112342	8.70122	1	6	DG8S153
0.458379	1.32	159	0.034591	473	0.026427	0.028481	0.549849	1	14	DG8S153
0.892697	1.0255	159	0.141509	473	0.138478	0.139241	0.018196	1	8	DG8S153
0.088491	0.580456	159	0.034591	473	0.05814	0.052215	2.90161	1	10	DG8S153
0.185722	0.543722	159	0.015723	473	0.028541	0.025317	1.75123	1	4	DG8S153
0.090749	3.00638	159	0.015723	473	0.005285	0.007911	2.86103	1	12	DG8S153
0.784783	0.742904	159	0.003145	473	0.004228	0.003956	0.074579	1	-4	DG8S153
0.381037	1.12242	208	0.336538	453	0.311258	0.319213	0.834284	1	4	DG8S155
0.458219	0.858947	208	0.086539	453	0.099338	0.09531	0.550243	1	8	DG8S155
0.66846	0.915046	208	0.086539	453	0.093819	0.091528	0.183409	1	2	DG8S155
0.780972	0.96223	208	0.237981	453	0.245033	0.242814	0.077314	1	6	DG8S155
0.201895	1.53565	208	0.038462	453	0.025386	0.029501	1.62861	1	14	DG8S155
0.560704	0.889464	208	0.091346	453	0.101545	0.098336	0.338487	1	0	DG8S155
0.99073	1.00271	208	0.069712	453	0.069536	0.069592	0.000135	1	10	DG8S155
0.362456	0.75398	208	0.033654	453	0.04415	0.040847	0.829366	1	12	DG8S155
0.384561	2.88E-10	208	3.18E-13	453	0.001104	0.000756	0.756071	1	-16	DG8S155
0.070726	3.66179	208	0.012019	453	0.003311	0.006051	3.26609	1	-10	DG8S155
0.384561	2.88E-10	208	3.18E-13	453	0.001104	0.000756	0.756071	1	-2	DG8S155
0.686813	1.4541	208	0.004808	453	0.003311	0.003782	0.162558	1	16	DG8S155
0.58637	2.18074	208	0.002404	453	0.001104	0.001513	0.296049	1	-12	DG8S155
0.252035	1.12465	266	0.411654	777	0.383526	0.3907	1.31199	1	6	DG8S156
0.079775	0.838003	266	0.524436	777	0.568211	0.557047	3.06948	1	0	DG8S156
0.212713	1.38788	266	0.043233	777	0.031532	0.034516	1.55287	1	-6	DG8S156
0.183633	2.39E-11	266	4.62E-14	777	0.001931	0.001438	1.76798	1	3	DG8S156
0.367853	1.40541	266	0.020677	777	0.014801	0.016299	0.810903	1	9	DG8S156
0.80929	0.946461	240	0.9375	556	0.940647	0.939698	0.058246	1	0	DG8S159
0.709136	1.09786	240	0.052083	556	0.047662	0.048995	0.139141	1	-2	DG8S159

FIG. 11C4

0.296272	0.531689	240	0.00625	556	0.011691	0.01005	1.0909	1	2	DG8S159
0.028441	18155.3	240	0.004166	556	2.30E-07	0.001256	4.80116	1	-6	DG8S159
0.003748	0.744604	284	0.353873	735	0.42381	0.404318	8.4018	1	0	DG8S161
0.003748	1.343	284	0.646127	735	0.57619	0.595682	8.4018	1	2	DG8S161
0.05598	1.20367	288	0.515625	815	0.469325	0.481414	3.65266	1	0	DG8S163
0.05598	0.830793	288	0.484375	815	0.530675	0.518586	3.65266	1	3	DG8S163
0.523898	0.934417	276	0.315217	759	0.33004	0.326087	0.406213	1	0	DG8S170
0.660506	1.04706	276	0.661232	759	0.650856	0.653623	0.192909	1	2	DG8S170
0.4587	1.32163	276	0.019928	759	0.015152	0.016425	0.549064	1	-4	DG8S170
0.798541	1.37568	276	0.001812	759	0.001318	0.001449	0.065145	1	-19	DG8S170
0.265216	1.68E-11	276	2.22E-14	759	0.001318	0.000966	1.24132	1	-8	DG8S170
0.798541	1.37568	276	0.001812	759	0.001318	0.001449	0.065145	1	-2	DG8S170
0.277942	0.895153	284	0.408451	643	0.435459	0.427184	1.17713	1	14	DG8S177
0.865528	0.904965	284	0.007042	643	0.007776	0.007551	0.028677	1	20	DG8S177
0.731981	0.960051	284	0.230634	643	0.237947	0.235707	0.1173	1	12	DG8S177
0.407745	1.14793	284	0.107394	643	0.094868	0.098706	0.685366	1	18	DG8S177
0.419576	2.26855	284	0.003521	643	0.001555	0.002158	0.651502	1	2	DG8S177
0.822181	1.048	284	0.06338	643	0.060653	0.061489	0.050508	1	0	DG8S177
0.962421	1.00717	284	0.126761	643	0.125972	0.126214	0.00222	1	16	DG8S177
0.09496	1.50315	284	0.052817	643	0.03577	0.040992	2.78822	1	10	DG8S177
0.085977	0.837931	271	0.48155	622	0.525723	0.512318	2.94814	1	0	DG8S179
0.085977	1.19342	271	0.51845	622	0.474276	0.487682	2.94814	1	7	DG8S179
0.698546	0.956803	285	0.264912	625	0.2736	0.270879	0.149989	1	10	DG8S181
0.529296	0.929813	285	0.250877	625	0.2648	0.26044	0.395743	1	12	DG8S181
0.549125	0.908757	285	0.108772	625	0.1184	0.115385	0.358888	1	4	DG8S181
0.556533	1.107	285	0.098246	625	0.0896	0.092308	0.345743	1	0	DG8S181
0.802839	1.03721	285	0.140351	625	0.136	0.137363	0.062338	1	8	DG8S181
0.311381	1.47192	285	0.021053	625	0.0144	0.016484	1.02481	1	16	DG8S181
0.476286	1.22626	285	0.035088	625	0.0288	0.030769	0.507356	1	18	DG8S181
0.638487	1.10319	285	0.064912	625	0.0592	0.060989	0.220726	1	14	DG8S181
0.271616	2.20142	285	0.007018	625	0.0032	0.004396	1.20857	1	-2	DG8S181
0.150962	0.272845	285	0.001754	625	0.0064	0.004945	2.06251	1	2	DG8S181
0.720999	1.25492	285	0.007018	625	0.0056	0.006044	0.127537	1	6	DG8S181
0.090162	0.738911	239	0.895397	818	0.920538	0.914853	2.87149	1	0	DG8S182
0.090162	1.35334	239	0.104603	818	0.079462	0.085147	2.87149	1	-3	DG8S182
0.932953	1.01025	266	0.763158	641	0.76131	0.761852	0.007078	1	0	DG8S188
0.932953	0.989858	266	0.236842	641	0.23869	0.238148	0.007078	1	-1	DG8S188
0.50016	0.918664	164	0.533537	568	0.554577	0.549863	0.454596	1	0	DG8S192
0.694277	0.93582	164	0.161585	568	0.170775	0.168716	0.154494	1	2	DG8S192
0.565236	1.24438	164	0.030488	568	0.024648	0.025958	0.330719	1	16	DG8S192
0.04181	1.47675	164	0.140244	568	0.099472	0.108607	4.14289	1	-2	DG8S192
0.458915	0.82142	164	0.054878	568	0.066021	0.063525	0.548539	1	4	DG8S192
0.334129	2.08801	164	0.009146	568	0.004401	0.005464	0.93283	1	8	DG8S192
0.333204	0.780091	164	0.057927	568	0.073063	0.069672	0.936407	1	12	DG8S192
0.664752	1.73395	164	0.003049	568	0.001761	0.002049	0.187803	1	-4	DG8S192
0.153974	1.35E-14	164	4.78E-17	568	0.003521	0.002732	2.03243	1	10	DG8S192
0.070388	5.23379	164	0.009146	568	0.001761	0.003415	3.27395	1	14	DG8S192
6.82E-05	0.670285	283	0.535336	730	0.632192	0.605133	15.8592	1	0	DG8S197
0.000124	1.47085	283	0.461131	730	0.367808	0.39388	14.738	1	1	DG8S197
0.023849	25908.7	283	0.003533	730	1.37E-07	0.000987	5.1056	1	2	DG8S197
0.200705	1.1383	275	0.534546	677	0.502216	0.511555	1.63724	1	0	DG8S201
0.104707	0.837728	275	0.296364	677	0.334564	0.323529	2.63234	1	4	DG8S201
0.974149	0.995157	275	0.130909	677	0.131462	0.131303	0.00105	1	-2	DG8S201
0.486146	1.21031	275	0.038182	677	0.031758	0.033613	0.485045	1	2	DG8S201
0.587808	1.16354	197	0.959391	735	0.953061	0.954399	0.29378	1	0	DG8S212
0.587808	0.859444	197	0.040609	735	0.046939	0.045601	0.29378	1	2	DG8S212
0.109145	1.26268	149	0.697987	392	0.646684	0.660813	2.56656	1	4	DG8S215
0.127499	0.800874	149	0.302013	392	0.350765	0.337338	2.3227	1	0	DG8S215
0.256041	2.21E-11	149	5.64E-14	392	0.002551	0.001848	1.29004	1	2	DG8S215
0.18799	1.18051	246	0.400406	292	0.361301	0.379182	1.7333	1	0	DG8S221
0.928563	1.01236	246	0.276423	292	0.273973	0.275093	0.008038	1	5	DG8S221
0.035493	0.69336	246	0.123984	292	0.169521	0.148699	4.42129	1	-2	DG8S221
0.749277	0.914805	246	0.048781	292	0.053082	0.051115	0.102139	1	7	DG8S221
0.595972	1.10172	246	0.134146	292	0.123288	0.128253	0.281114	1	4	DG8S221
0.38024	0.590165	246	0.00813	292	0.013699	0.011152	0.769925	1	1	DG8S221
0.464631	2.37959	246	0.004065	292	0.001712	0.002788	0.534715	1	8	DG8S221
0.863722	1.18775	246	0.004065	292	0.003425	0.003717	0.02946	1	-1	DG8S221
0.132044	0.8478	266	0.295113	726	0.330579	0.321069	2.26831	1	0	DG8S232
0.015593	1.28256	266	0.441729	726	0.381543	0.397681	5.84822	1	2	DG8S232
0.266154	0.847444	266	0.12594	726	0.145317	0.140121	1.23646	1	-8	DG8S232
0.475486	1.1364	266	0.092105	726	0.081956	0.084677	0.509198	1	-4	DG8S232
0.398846	0.787598	266	0.030075	726	0.037879	0.035786	0.711804	1	4	DG8S232
0.343976	0.678096	266	0.013158	726	0.019284	0.017641	0.895557	1	-2	DG8S232
0.486272	2.73258	266	0.00188	726	0.000689	0.001008	0.484764	1	-6	DG8S232
0.113821	1.45E-13	266	4.01E-16	726	0.002755	0.002016	2.50034	1	6	DG8S232
0.071301	1.40918	282	0.934397	672	0.90997	0.917191	3.25281	1	0	DG8S238
0.071301	0.70963	282	0.065603	672	0.09003	0.082809	3.25281	1	-8	DG8S238
0.010364	0.711215	157	0.563694	476	0.644958	0.624803	6.57128	1	4	DG8S242
0.010364	1.40604	157	0.436306	476	0.355042	0.375197	6.57128	1	0	DG8S242
0.413669	1.1601	273	0.908425	468	0.895299	0.900135	0.668232	1	0	DG8S245
0.51171	1.15354	273	0.069597	468	0.060897	0.064103	0.430569	1	-4	DG8S245
0.021506	0.472897	273	0.020147	468	0.041667	0.033738	5.28532	1	4	DG8S245

FIG. 11C5

0.898924	0.856879	273	0.001832	468	0.002137	0.002024	0.016134	1	-8	DG8S245
0.806011	0.971318	184	0.5625	682	0.569648	0.568129	0.060308	1	0	DG8S249
0.067761	0.74417	184	0.141304	682	0.181085	0.172633	3.33645	1	-19	DG8S249
0.218722	1.62861	184	0.027174	682	0.016862	0.019053	1.51274	1	-17	DG8S249
0.262401	0.525638	184	0.008152	682	0.015396	0.013857	1.25605	1	-21	DG8S249
0.186759	1.27882	184	0.122283	682	0.098241	0.103349	1.743	1	-2	DG8S249
0.180892	0.306994	184	0.002717	682	0.008798	0.007506	1.79028	1	6	DG8S249
0.274525	1.33859	184	0.057065	682	0.043255	0.046189	1.19399	1	2	DG8S249
0.000877	2.37E-14	184	4.06E-16	682	0.016862	0.013279	11.0706	1	-6	DG8S249
0.474337	0.651249	184	0.008152	682	0.012463	0.011547	0.511855	1	4	DG8S249
0.006519	2.09302	184	0.065217	682	0.032258	0.039261	7.40092	1	-4	DG8S249
0.067139	1.43E-12	184	7.38E-15	682	0.005132	0.004042	3.35163	1	-1	DG8S249
0.012747	33521.7	184	0.005434	682	1.63E-07	0.001155	6.20393	1	-8	DG8S249
0.876085	1.03605	287	0.054007	584	0.052226	0.052813	0.024315	1	-10	DG8S250
0.059451	0.793205	287	0.203833	584	0.244007	0.230769	3.55263	1	-4	DG8S250
0.777552	1.04347	287	0.134146	584	0.129281	0.130884	0.079812	1	2	DG8S250
0.671776	1.05605	287	0.198606	584	0.190068	0.192882	0.179532	1	4	DG8S250
0.793481	0.946321	287	0.060976	584	0.064212	0.063146	0.068535	1	-2	DG8S250
0.937633	0.99083	287	0.249129	584	0.250856	0.250287	0.006122	1	0	DG8S250
0.260349	1.67546	287	0.015679	584	0.009418	0.011481	1.2669	1	8	DG8S250
0.056123	2.24587	287	0.020906	584	0.009418	0.013203	3.6484	1	-8	DG8S250
0.527266	1.24457	287	0.02439	584	0.019692	0.02124	0.399658	1	6	DG8S250
0.457081	1.36288	287	0.017422	584	0.012843	0.014351	0.553034	1	-12	DG8S250
0.478395	1.32285	287	0.019164	584	0.014555	0.016074	0.502519	1	-6	DG8S250
0.519284	0.507857	287	0.001742	584	0.003425	0.00287	0.415316	1	12	DG8S250
0.025242	0.794875	280	0.576786	680	0.631618	0.615625	5.00719	1	0	DG8S257
0.824495	1.05493	280	0.046429	680	0.044118	0.044792	0.049181	1	-6	DG8S257
0.053394	1.22755	280	0.358929	680	0.313235	0.326562	3.73154	1	-2	DG8S257
0.781377	0.86615	280	0.008929	680	0.010294	0.009896	0.077021	1	2	DG8S257
0.005737	12.2433	280	0.008929	680	0.000735	0.003125	7.63113	1	-9	DG8S257
0.197364	1.17988	251	0.227092	637	0.199372	0.207207	1.66177	1	15	DG8S258
0.783605	0.971373	251	0.543825	637	0.55102	0.548986	0.075275	1	18	DG8S258
0.398306	1.43534	251	0.017928	637	0.012559	0.014077	0.713434	1	0	DG8S258
0.27797	0.866995	251	0.191235	637	0.214286	0.20777	1.17699	1	12	DG8S258
0.248859	2.47E-13	251	3.88E-16	637	0.00157	0.001126	1.3297	1	24	DG8S258
0.405954	0.706504	251	0.013944	637	0.019623	0.018018	0.69062	1	21	DG8S258
0.139198	3.82363	251	0.005976	637	0.00157	0.002815	2.18682	1	33	DG8S258
0.511547	1.09839	155	0.725806	549	0.70674	0.710938	0.430901	1	2	DG8S261
0.442146	0.895729	155	0.270968	549	0.29326	0.288352	0.590707	1	0	DG8S261
0.081789	28913.2	155	0.003225	549	1.12E-07	0.00071	3.02898	1	-2	DG8S261
0.917373	1.03676	149	0.036913	561	0.035651	0.035916	0.010763	1	-4	DG8S262
0.937128	0.989756	149	0.526846	561	0.529412	0.528873	0.006222	1	0	DG8S262
0.167011	1.3457	149	0.114094	561	0.087344	0.092956	1.90957	1	-10	DG8S262
0.507263	1.10801	149	0.238255	561	0.220143	0.223944	0.43971	1	2	DG8S262
0.136593	0.541764	149	0.020134	561	0.036542	0.033099	2.21593	1	-2	DG8S262
0.459657	0.80888	149	0.050336	561	0.061497	0.059155	0.54673	1	4	DG8S262
0.426938	0.62373	149	0.010067	561	0.016043	0.014789	0.631137	1	6	DG8S262
0.231698	0.340068	149	0.003356	561	0.009804	0.008451	1.4304	1	-14	DG8S262
0.169501	1.20E-12	149	4.29E-15	561	0.003565	0.002817	1.88735	1	8	DG8S262
0.139116	1.19325	292	0.224315	751	0.195073	0.20326	2.18771	1	15	DG8S265
0.25268	0.894052	292	0.530822	751	0.558589	0.550815	1.30843	1	18	DG8S265
0.194727	1.63747	292	0.020548	751	0.01265	0.014861	1.68149	1	0	DG8S265
0.697742	0.954193	292	0.202055	751	0.20972	0.207574	0.150831	1	12	DG8S265
0.485853	0.758744	292	0.013699	751	0.017976	0.016779	0.485697	1	21	DG8S265
0.04906	5.17242	292	0.006849	751	0.001332	0.002876	3.8733	1	33	DG8S265
0.289948	0.366333	292	0.001712	751	0.00466	0.003835	1.11986	1	-6	DG8S265
0.086333	1.19793	256	0.501953	615	0.456911	0.470149	2.94146	1	-2	DG8S266
0.119002	0.846488	256	0.394531	615	0.434959	0.423077	2.4304	1	0	DG8S266
0.775754	0.952397	256	0.103516	615	0.10813	0.106774	0.081143	1	-4	DG8S266
0.174019	1.14617	284	0.424296	741	0.391363	0.400488	1.84797	1	-4	DG8S269
0.017797	0.790452	284	0.522887	741	0.580972	0.564878	5.61601	1	0	DG8S269
0.007424	1.95983	284	0.052817	741	0.027665	0.034634	7.16744	1	-5	DG8S269
0.207753	0.855855	224	0.272321	567	0.304233	0.295196	1.58701	1	-2	DG8S271
0.155673	1.17828	224	0.645089	567	0.606702	0.617573	2.01576	1	0	DG8S271
0.76238	0.941163	224	0.082589	567	0.087302	0.085967	0.09142	1	2	DG8S271
0.248316	1.27E-11	224	2.24E-14	567	0.001764	0.001264	1.33275	1	4	DG8S271
0.08048	2.08801	276	0.019928	674	0.009644	0.012632	3.05518	1	-6	DG8S277
0.613804	1.05848	276	0.28442	674	0.272997	0.276316	0.254673	1	10	DG8S277
0.16432	0.853054	276	0.253623	674	0.284866	0.275789	1.93401	1	0	DG8S277
0.289898	0.809775	276	0.063406	674	0.077151	0.073158	1.1201	1	-2	DG8S277
0.170558	1.17101	276	0.273551	674	0.243323	0.252105	1.87803	1	2	DG8S277
0.892018	1.02996	276	0.057971	674	0.05638	0.056842	0.018428	1	8	DG8S277
0.039967	0.32936	276	0.005435	674	0.016321	0.013158	4.21927	1	4	DG8S277
0.404461	0.541014	276	0.003623	674	0.006677	0.005789	0.695024	1	-4	DG8S277
0.300118	1.53598	276	0.018116	674	0.011869	0.013684	1.07367	1	6	DG8S277
0.906912	0.95484	276	0.016304	674	0.017062	0.016842	0.013674	1	12	DG8S277
0.97755	0.976729	276	0.003623	674	0.003709	0.003684	0.000792	1	14	DG8S277
0.074801	0.825761	254	0.543307	576	0.590278	0.575904	3.17439	1	0	DG8S285
0.13877	1.18065	254	0.360236	576	0.322917	0.334337	2.19154	1	2	DG8S285
0.687651	1.08508	254	0.076772	576	0.071181	0.072892	0.16164	1	1	DG8S285
0.559354	1.26506	254	0.019685	576	0.015625	0.016868	0.340825	1	-1	DG8S285
0.356384	1.11164	239	0.633891	500	0.609	0.61705	0.850596	1	0	DG8S291

FIG. 11C6

0.162405	0.655564	239	0.029289	500	0.044	0.039242	1.95169	1	-2	DG8S291
0.664214	0.94411	239	0.223849	500	0.234	0.230717	0.188445	1	4	DG8S291
0.976872	0.994705	239	0.10251	500	0.103	0.102842	0.00084	1	2	DG8S291
0.934355	1.04651	239	0.01046	500	0.01	0.010149	0.006784	1	6	DG8S291
0.636583	1.06313	185	0.724324	729	0.711934	0.714442	0.223238	1	2	DG8S292
0.636583	0.940619	185	0.275676	729	0.288066	0.285558	0.223238	1	0	DG8S292
0.93628	1.00923	280	0.25	727	0.248281	0.248759	0.006391	1	12	DG8S297
0.403305	0.915914	280	0.330357	727	0.350069	0.344588	0.69845	1	0	DG8S297
0.656559	1.06702	280	0.1375	727	0.129986	0.132075	0.19773	1	4	DG8S297
0.20533	0.81757	280	0.101786	727	0.121733	0.116187	1.60405	1	16	DG8S297
0.026116	2.06626	280	0.032143	727	0.015819	0.020358	4.94835	1	8	DG8S297
0.171493	2.03235	280	0.0125	727	0.00619	0.007944	1.86985	1	-4	DG8S297
0.756145	1.11522	280	0.021429	727	0.019257	0.019861	0.096439	1	18	DG8S297
0.02801	0.35351	280	0.007143	727	0.019945	0.016385	4.82744	1	6	DG8S297
0.641176	1.14454	280	0.032143	727	0.028198	0.029295.	0.217208	1	10	DG8S297
0.360383	1.21198	280	0.064286	727	0.053645	0.056604	0.836558	1	14	DG8S297
0.507417	2.59929	280	0.001786	727	0.000688	0.000993	0.439391	1	2	DG8S297
0.518055	1.44644	280	0.008929	727	0.00619	0.006951	0.417764	1	-2	DG8S297
0.003916	1.51561	256	0.871094	726	0.816804	0.830957	8.32244	1	0	DG8S298
0.003878	0.652947	256	0.121094	726	0.174242	0.160387	8.34019	1	2	DG8S298
0.808617	0.871595	256	0.007813	726	0.008953	0.008656	0.058666	1	1	DG8S298
0.441209	0.903605	265	0.798113	602	0.813953	0.809112	0.593136	1	0	DG8S301
0.441209	1.10668	265	0.201887	602	0.186047	0.190888	0.593136	1	1	DG8S301
0.641908	1.05266	247	0.356275	666	0.344595	0.347755	0.216255	1	26	DG8S302
0.890881	1.02213	247	0.125506	666	0.123123	0.123768	0.018821	1	24	DG8S302
0.395509	1.09979	247	0.340081	666	0.319069	0.324754	0.721937	1	28	DG8S302
0.855019	0.958143	247	0.052632	666	0.054805	0.054217	0.033386	1	30	DG8S302
0.075343	0.762485	247	0.125506	666	0.158408	0.149507	3.16261	1	0	DG8S302
0.52425	0.930767	287	0.740418	756	0.753968	0.75024	0.405524	1	2	DG8S303
0.861317	1.12959	287	0.005226	756	0.00463	0.004794	0.030519	1	4	DG8S303
0.519333	1.07584	287	0.254355	756	0.240741	0.244487	0.415218	1	-2	DG8S303
0.422334	1.92E-14	287	1.27E-17	756	0.000661	0.000479	0.643812	1	0	DG8S303
0.828691	1.06	60	0.166667	315	0.15873	0.16	0.046821	1	0	DG8S307
0.993008	1.00192	60	0.708333	315	0.707937	0.708	7.68E-05	1	4	DG8S307
0.41296	1.30254	60	0.116667	315	0.092064	0.096	0.670264	1	-4	DG8S307
0.038339	0.195216	60	0.008333	315	0.04127	0.036	4.28994	1	8	DG8S307
0.174508	0.867749	268	0.597015	689	0.630624	0.621212	1.84378	1	0	DG8S308
0.152562	1.20791	268	0.19403	689	0.166183	0.173981	2.04644	1	2	DG8S308
0.976251	0.994712	268	0.089552	689	0.089986	0.089864	0.000886	1	-14	DG8S308
0.352781	1.21652	268	0.067164	689	0.055878	0.059039	0.86343	1	-4	DG8S308
0.46913	0.781059	268	0.020522	689	0.026125	0.024556	0.524025	1	-6	DG8S308
0.541584	1.29032	268	0.016791	689	0.013062	0.014107	0.372611	1	-2	DG8S308
0.622344	0.819999	268	0.014925	689	0.018142	0.017241	0.242587	1	4	DG8S308
0.338258	1.69655	293	0.010239	660	0.006061	0.007345	0.917023	1	8	DG8S316
0.626009	0.949049	293	0.305461	660	0.316667	0.313221	0.237511	1	10	DG8S316
0.158291	1.15119	293	0.46587	660	0.431061	0.441763	1.99048	1	0	DG8S316
0.879686	0.976132	293	0.107509	660	0.109848	0.109129	0.022912	1	12	DG8S316
0.119081	0.771131	293	0.088737	660	0.112121	0.104932	2.42938	1	14	DG8S316
0.580561	0.807973	293	0.015358	660	0.018939	0.017838	0.305329	1	16	DG8S316
0.689952	1.28915	293	0.006826	660	0.005303	0.005771	0.159137	1	2	DG8S316
0.710668	1.04144	241	0.414938	606	0.405116	0.40791	0.13761	1	2	DG8S322
0.595587	0.852636	241	0.03112	606	0.036304	0.034829	0.281703	1	10	DG8S322
0.355476	1.10787	241	0.392116	606	0.367987	0.374852	0.853813	1	0	DG8S322
0.511815	0.895057	241	0.109959	606	0.121287	0.118064	0.430354	1	4	DG8S322
0.178024	0.734605	241	0.051867	606	0.069307	0.064345	1.81404	1	6	DG8S322
0.907702	1.01284	297	0.728956	700	0.726429	0.727182	0.013442	1	0	DG8S323
0.907702	0.987325	297	0.271044	700	0.273571	0.272818	0.013442	1	5	DG8S323
0.349639	1.10583	285	0.319298	695	0.297842	0.304082	0.874767	1	0	DG8S324
0.977007	0.990462	285	0.022807	695	0.023022	0.022959	0.000831	1	10	DG8S324
0.443604	1.0948	285	0.236842	695	0.220863	0.22551	0.586942	1	8	DG8S324
0.057369	0.72887	285	0.087719	695	0.116547	0.108163	3.61186	1	6	DG8S324
0.81871	0.965635	285	0.119298	695	0.123022	0.121939	0.052534	1	4	DG8S324
0.974544	0.996016	285	0.196491	695	0.197122	0.196939	0.001018	1	2	DG8S324
0.560044	0.809524	285	0.017544	695	0.021583	0.020408	0.339627	1	12	DG8S324
0.985668	0.997367	279	0.132616	726	0.13292	0.132836	0.000323	1	-4	DG8S332
0.26551	0.798167	279	0.05914	726	0.073003	0.069154	1.2398	1	4	DG8S332
0.102733	0.824595	279	0.216846	726	0.251377	0.241791	2.6626	1	2	DG8S332
0.01251	0.734721	279	0.184588	726	0.235537	0.221393	6.2371	1	-2	DG8S332
0.00022	1.49355	279	0.340502	726	0.256887	0.2801	13.6552	1	0	DG8S332
0.312897	1.41148	279	0.02509	726	0.017906	0.019901	1.01841	1	-6	DG8S332
0.340492	1.28515	279	0.041219	726	0.032369	0.034826	0.908577	1	6	DG8S332
0.138081	0.837115	260	0.257692	539	0.293135	0.281602	2.19922	1	-5	DG8S333
0.138081	1.19458	260	0.742308	539	0.706865	0.718398	2.19922	1	0	DG8S333
0.126081	0.859129	295	0.377966	764	0.414267	0.404155	2.34011	1	1	SG08S100
0.126081	1.16397	295	0.622034	764	0.585733	0.595845	2.34011	1	2	SG08S100
0.002054	0.711664	295	0.398305	387	0.481912	0.445748	9.50073	1	1	SG08S102
0.002054	1.40516	295	0.601695	387	0.518088	0.554252	9.50073	1	2	SG08S102
0.065066	0.810575	297	0.621212	390	0.669231	0.648472	3.4033	1	0	SG08S112
0.065066	1.23369	297	0.378788	390	0.330769	0.351528	3.4033	1	2	SG08S112
0.028331	0.806452	297	0.5	700	0.553571	0.537613	4.8078	1	0	SG08S120
0.028331	1.24	297	0.5	700	0.446429	0.462387	4.8078	1	2	SG08S120
0.143127	0.852151	293	0.711604	746	0.743298	0.73436	2.14401	1	0	SG08S138

FIG. 11C7

0.143127	1.1735	293	0.288396	746	0.256702	0.26564	2.14401	1	2	SG08S138
0.006102	0.764033	295	0.498305	713	0.565217	0.545635	7.51987	1	0	SG08S15
0.006102	1.30884	295	0.501695	713	0.434783	0.454365	7.51987	1	2	SG08S15
0.033807	1.23132	297	0.503367	701	0.451498	0.466934	4.50445	1	0	SG08S26
0.033807	0.812135	297	0.496633	701	0.548502	0.533066	4.50445	1	2	SG08S26
0.024806	1.27723	294	0.506803	397	0.445844	0.47178	5.03735	1	2	SG08S27
0.024806	0.782947	294	0.493197	397	0.554156	0.52822	5.03735	1	1	SG08S27
0.150121	0.852391	295	0.581356	397	0.619647	0.603324	2.07102	1	1	SG08S32
0.150121	1.17317	295	0.418644	397	0.380353	0.396676	2.07102	1	0	SG08S32
0.067347	1.20817	292	0.636986	618	0.592233	0.606593	3.34653	1	1	SG08S35
0.067347	0.827701	292	0.363014	618	0.407767	0.393407	3.34653	1	2	SG08S35
0.014737	0.777004	294	0.435374	523	0.498088	0.47552	5.94763	1	1	SG08S39
0.014737	1.28699	294	0.564626	523	0.501912	0.52448	5.94763	1	0	SG08S39
0.353952	0.909915	294	0.363946	689	0.386067	0.379451	0.85924	1	0	SG08S42
0.353952	1.099	294	0.636054	689	0.613933	0.620549	0.85924	1	2	SG08S42
0.824719	0.963618	295	0.098305	610	0.101639	0.100552	0.049054	1	1	SG08S46
0.824719	1.03775	295	0.901695	610	0.898361	0.899448	0.049054	1	3	SG08S46
0.00032	0.701393	291	0.517182	743	0.604307	0.579787	12.9497	1	0	SG08S5
0.00032	1.42574	291	0.482818	743	0.395693	0.420213	12.9497	1	2	SG08S5
0.219611	0.88411	290	0.408621	685	0.438686	0.429744	1.50691	1	2	SG08S50
0.219611	1.13108	290	0.591379	685	0.561314	0.570256	1.50691	1	0	SG08S50
0.004498	0.73126	292	0.469178	381	0.547244	0.513373	8.07093	1	0	SG08S506
0.004498	1.3675	292	0.530822	381	0.452756	0.486627	8.07093	1	2	SG08S506
0.021168	0.765893	294	0.304422	396	0.363636	0.338406	5.31288	1	2	SG08S507
0.021168	1.30567	294	0.695578	396	0.636364	0.661594	5.31288	1	3	SG08S507
0.001044	0.692023	290	0.353448	392	0.441327	0.403959	10.7479	1	1	SG08S508
0.001044	1.44504	290	0.646552	392	0.558673	0.596041	10.7479	1	3	SG08S508
0.604879	1.07435	282	0.801418	371	0.789757	0.794793	0.2677	1	1	SG08S510
0.604879	0.930792	282	0.198582	371	0.210243	0.205207	0.2677	1	0	SG08S510
0.238703	1.14198	291	0.439863	362	0.407459	0.421899	1.38824	1	1	SG08S511
0.238703	0.875674	291	0.560137	362	0.592541	0.578101	1.38824	1	3	SG08S511
0.117631	1.18967	292	0.441781	388	0.399485	0.417647	2.44858	1	2	SG08S512
0.117631	0.84057	292	0.558219	388	0.600515	0.582353	2.44858	1	1	SG08S512
0.00892	0.749774	295	0.4	392	0.470663	0.44032	6.83873	1	1	SG08S517
0.00892	1.33373	295	0.6	392	0.529337	0.55968	6.83873	1	3	SG08S517
0.000365	1.49072	292	0.65411	397	0.559194	0.599419	12.701	1	1	SG08S520
0.000365	0.670815	292	0.34589	397	0.440806	0.400581	12.701	1	0	SG08S520
0.199841	0.856692	294	0.697279	391	0.7289	0.715328	1.64354	1	2	SG08S6
0.199841	1.16728	294	0.302721	391	0.2711	0.284672	1.64354	1	0	SG08S6
0.003309	0.721047	285	0.422807	380	0.503947	0.469173	8.62898	1	1	SG08S70
0.003309	1.38687	285	0.577193	380	0.496053	0.530827	8.62898	1	3	SG08S70
4.32E-05	1.49537	295	0.605085	740	0.506081	0.5343	16.7266	1	0	SG08S71
4.32E-05	0.668732	295	0.394915	740	0.493919	0.4657	16.7266	1	2	SG08S71
0.000207	0.662887	292	0.412671	378	0.51455	0.470149	13.7681	1	3	SG08S73
0.000207	1.50855	292	0.587329	378	0.48545	0.529851	13.7681	1	1	SG08S73
0.195671	0.867883	293	0.44198	394	0.477157	0.462154	1.67439	1	1	SG08S76
0.195671	1.15223	293	0.55802	394	0.522843	0.537846	1.67439	1	2	SG08S76
0.91286	0.988164	296	0.508446	394	0.511421	0.510145	0.011975	1	0	SG08S90
0.91286	1.01198	296	0.491554	394	0.488579	0.489855	0.011975	1	1	SG08S90
0.007751	0.726157	297	0.765993	705	0.81844	0.802894	7.09002	1	1	SG08S93
0.007751	1.37711	297	0.234007	705	0.18156	0.197106	7.09002	1	2	SG08S93
0.639646	0.94514	275	0.321818	362	0.334254	0.328885	0.219205	1	0	SG08S94
0.639646	1.05804	275	0.678182	362	0.665746	0.671115	0.219205	1	2	SG08S94
0.000601	1.41718	294	0.496599	586	0.41041	0.439205	11.7742	1	2	SG08S95
0.000601	0.705628	294	0.503401	586	0.58959	0.560795	11.7742	1	3	SG08S95
0.132106	1.16662	295	0.616949	613	0.579935	0.59196	2.26758	1	2	SG08S96
0.132106	0.857175	295	0.383051	613	0.420065	0.40804	2.26758	1	3	SG08S96
0.878948	0.976023	299	0.894649	713	0.896914	0.896245	0.023196	1	0	SG08S97
0.878948	1.02457	299	0.105351	713	0.103088	0.103755	0.023196	1	1	SG08S97

FIG. 11C8

Appendix 3: Output of association with bipolar disorder.

P-value	Relative Risk	Number of Affecteds	Frequency in Affecteds	Number of Controls	Frequency in Controls	Frequency under Null Hypothesis	Chi-square Statistic	Information	Allele	Marker
0.636132	0.927223	96	0.640625	811	0.65783	0.656009	0.223837	1	4	AC022239-5
0.227291	1.23196	96	0.28125	811	0.24106	0.245314	1.45774	1	0	AC022239-5
0.316779	0.740298	96	0.0625	811	0.0826141	0.080485	1.0022	1	8	AC022239-5
0.814911	0.843158	96	0.010417	811	0.0123305	0.012128	0.054801	1	-4	AC022239-5
0.863298	1.20792	96	0.005208	811	0.0043157	0.00441	0.029645	1	-8	AC022239-5
0.412413	2.12E-12	96	3.93E-15	811	0.0018496	0.001654	0.671834	1	-12	AC022239-5
0.160568	1.41548	86	0.139535	574	0.102787	0.107576	1.96887	1	12	AC068974-2
0.421391	1.15389	86	0.313954	574	0.283972	0.287879	0.646434	1	14	AC068974-2
0.23462	0.82084	86	0.395349	574	0.44338	0.437121	1.41263	1	0	AC068974-2
0.860978	1.07122	86	0.046512	574	0.043554	0.043939	0.03067	1	16	AC068974-2
0.440332	0.677047	86	0.023256	574	0.0339721	0.032576	0.595417	1	6	AC068974-2
0.367219	0.718343	86	0.046512	574	0.0635888	0.061364	0.813054	1	10	AC068974-2
0.134389	2.25E-14	86	1.58E-16	574	0.0069686	0.006061	2.24106	1	20	AC068974-2
0.477172	0.51057	86	0.005814	574	0.011324	0.010606	0.505319	1	8	AC068974-2
0.597138	5.66E-11	86	4.94E-14	574	0.0008711	0.000758	0.279334	1	15	AC068974-2
0.116188	3.37871	86	0.017442	574	0.0052265	0.006818	2.46797	1	18	AC068974-2
0.597138	5.66E-11	86	4.94E-14	574	0.0008711	0.000758	0.279334	1	2	AC068974-2
0.518787	2.23196	86	0.005814	574	0.0026132	0.00303	0.416305	1	-2	AC068974-2
0.043377	64445.2	86	0.005813	574	9.07E-08	0.000758	4.08064	1	-4	AC068974-2
0.597138	5.66E-11	86	4.94E-14	574	0.0008711	0.000758	0.279334	1	13	AC068974-2
0.754266	0.933961	93	0.145161	780	0.153846	0.152921	0.097981	1	0	AF131215-1
0.224689	0.81593	93	0.295699	780	0.339744	0.335052	1.47417	1	2	AF131215-1
0.846815	1.0328	93	0.317204	780	0.310256	0.310997	0.03732	1	-2	AF131215-1
0.462742	0.692307	93	0.021505	780	0.0307692	0.029782	0.539254	1	22	AF131215-1
0.100567	2.13967	93	0.037635	780	0.0179487	0.020048	2.69654	1	-4	AF131215-1
0.673039	1.16949	93	0.048387	780	0.0416667	0.042383	0.178068	1	8	AF131215-1
0.794508	1.09076	93	0.05914	780	0.0544872	0.054983	0.06784	1	4	AF131215-1
0.716617	1.26229	93	0.016129	780	0.0128205	0.013173	0.131758	1	-6	AF131215-1
0.271308	1.49821	93	0.053764	780	0.0365385	0.038373	1.21012	1	10	AF131215-1
0.634992	6.50E-10	93	4.17E-13	780	0.000641	0.000573	0.225352	1	6	AF131215-1
0.034229	62457	93	0.005376	780	8.65E-08	0.000573	4.48322	1	14	AF131215-1
0.501936	1.77E-12	93	2.28E-15	780	0.0012821	0.001145	0.45084	1	12	AF131215-1
0.187336	0.81879	98	0.484694	780	0.534615	0.529043	1.73844	1	0	AF131215-2
0.152999	1.24434	98	0.454082	780	0.400641	0.406606	2.04209	1	4	AF131215-2
0.699807	0.878137	98	0.051021	780	0.0576923	0.056948	0.148673	1	8	AF131215-2
0.416268	2.00001	98	0.010204	780	0.0051282	0.005695	0.660829	1	-4	AF131215-2
0.399191	1.69E-12	98	3.26E-15	780	0.0019231	0.001708	0.710761	1	-8	AF131215-2
0.244447	0.834808	97	0.386598	795	0.430189	0.425448	1.35476	1	0	AF131215-4
0.018541	1.4314	97	0.525773	795	0.436478	0.446188	5.54432	1	14	AF131215-4
0.482884	0.81344	97	0.06701	795	0.0811321	0.079596	0.492344	1	12	AF131215-4
0.017526	0.170104	97	0.005155	795	0.0295597	0.026906	5.64289	1	8	AF131215-4
0.968347	1.02487	97	0.015464	795	0.0150943	0.015135	0.001575	1	16	AF131215-4
0.239428	5.16E-12	97	1.96E-14	795	0.0037736	0.003363	1.38396	1	18	AF131215-4
0.282932	8.68E-13	97	2.74E-15	795	0.0031447	0.002803	1.15295	1	10	AF131215-4
0.631289	5.34E-10	97	3.36E-13	795	0.0006289	0.000561	0.230316	1	4	AF131215-4
0.282669	1.36545	96	0.083333	801	0.062422	0.06466	1.15421	1	-6	AF188029-1
0.268777	0.834559	96	0.307292	801	0.347066	0.342809	1.22298	1	0	AF188029-1
0.549289	0.886101	96	0.166667	801	0.184145	0.182274	0.358593	1	-8	AF188029-1
0.594626	1.10444	96	0.21875	801	0.202247	0.204013	0.283178	1	-4	AF188029-1
0.821729	0.907332	96	0.03125	801	0.0343321	0.034002	0.05077	1	2	AF188029-1
0.239275	0.525159	96	0.015625	801	0.0293383	0.027871	1.38486	1	-12	AF188029-1
0.31964	1.29493	96	0.104167	801	0.082397	0.084727	0.990419	1	-2	AF188029-1
0.171693	1.53673	96	0.072917	801	0.0486891	0.051282	1.8681	1	-10	AF188029-1
0.634164	4.00E-10	96	2.50E-13	801	0.0006242	0.000557	0.226457	1	6	AF188029-1
0.074425	7.99E-12	96	7.05E-14	801	0.0087391	0.007804	3.18262	1	4	AF188029-1
0.857216	1.02828	95	0.431579	804	0.424751	0.425473	0.032371	1	0	AF188029-10
0.44934	0.887774	95	0.378947	804	0.407338	0.404338	0.572316	1	2	AF188029-10
0.691359	0.869309	95	0.047368	804	0.0541045	0.053393	0.157618	1	8	AF188029-10
0.244804	1.36547	95	0.1	804	0.0752488	0.077864	1.35271	1	4	AF188029-10
0.714284	1.15403	95	0.042105	804	0.0366915	0.037264	0.134035	1	-2	AF188029-10
0.503764	4.00E-10	95	4.98E-13	804	0.0012438	0.001112	0.446998	1	-4	AF188029-10
0.636436	5.51E-10	95	3.43E-13	804	0.0006219	0.000556	0.223433	1	6	AF188029-10
0.717684	1.07492	94	0.18617	795	0.175472	0.176603	0.130723	1	0	AF188029-12
0.793631	0.926871	94	0.074468	795	0.0798742	0.079303	0.068434	1	4	AF188029-12
0.634645	1.07691	94	0.579787	795	0.561635	0.563555	0.225814	1	-12	AF188029-12
0.438125	0.844172	94	0.138298	795	0.159748	0.15748	0.601188	1	-4	AF188029-12
0.862499	1.20931	94	0.005319	795	0.0044025	0.004499	0.029996	1	12	AF188029-12
0.775155	0.843242	94	0.015957	795	0.0188679	0.01856	0.08159	1	8	AF188029-12

FIG. 11D1

0.196727	0.82086	97	0.536083	809	0.584672	0.57947	1.66651	1	0	AF188029-7
0.248982	1.19447	97	0.43299	809	0.389988	0.394592	1.32901	1	-4	AF188029-7
0.552933	1.47921	97	0.015464	809	0.0105068	0.011038	0.35209	1	2	AF188029-7
0.53362	0.55371	97	0.005155	809	0.0092707	0.00883	0.387493	1	-2	AF188029-7
0.191893	3.36041	97	0.010309	809	0.0030902	0.003863	1.70302	1	4	AF188029-7
0.340916	1.01E-10	97	2.51E-13	809	0.0024722	0.002208	0.906983	1	6	AF188029-7
0.639475	1.09324	63	0.5	449	0.477728	0.480469	0.219429	1	0	AF287957-1
0.067242	0.692098	63	0.309524	449	0.393096	0.382812	3.34908	1	-6	AF287957-1
0.025708	3.04845	63	0.055556	449	0.0189309	0.023438	4.97556	1	4	AF287957-1
0.880581	1.06508	63	0.055556	449	0.0523385	0.052734	0.02257	1	-4	AF287957-1
0.475142	1.51682	63	0.031746	449	0.0211581	0.022461	0.509994	1	2	AF287957-1
0.423074	1.60292	63	0.031746	449	0.0200445	0.021484	0.641761	1	-2	AF287957-1
0.945167	0.949461	63	0.015873	449	0.0167038	0.016602	0.00473	1	-14	AF287957-1
0.11589	1.67752	100	0.065	867	0.0397924	0.042399	2.472	1	-12	D8S1130
0.968953	0.993269	100	0.245	867	0.246251	0.246122	0.001515	1	4	D8S1130
0.215316	0.78042	100	0.155	867	0.190311	0.18666	1.53532	1	0	D8S1130
0.973375	0.991546	100	0.095	867	0.0957324	0.095657	0.001114	1	8	D8S1130
0.818831	1.04133	100	0.235	867	0.227797	0.228542	0.052464	1	-8	D8S1130
0.720807	0.927687	100	0.145	867	0.154556	0.153568	0.127721	1	-4	D8S1130
0.441571	1.33774	100	0.045	867	0.0340254	0.03516	0.592198	1	12	D8S1130
0.978816	1.0202	100	0.01	867	0.0098039	0.009824	0.000705	1	16	D8S1130
0.418155	4.07E-12	100	7.05E-15	867	0.0017301	0.001551	0.655494	1	2	D8S1130
0.033067	79563.9	100	0.004999	867	6.32E-08	0.000517	4.54233	1	20	D8S1130
0.837578	1.03489	99	0.282828	839	0.275924	0.276652	0.042022	1	0	D8S1469
0.909489	1.01727	99	0.469697	839	0.465435	0.465885	0.012924	1	4	D8S1469
0.405936	1.18419	99	0.171717	839	0.148987	0.151386	0.69067	1	8	D8S1469
0.704869	1.27538	99	0.015152	839	0.011919	0.01226	0.143456	1	12	D8S1469
0.237766	0.657424	99	0.040404	839	0.0601907	0.058102	1.39379	1	3	D8S1469
0.20717	0.546562	99	0.020202	839	0.0363528	0.034648	1.5911	1	-4	D8S1469
0.504045	1.40E-12	99	1.67E-15	839	0.0011919	0.001066	0.446409	1	7	D8S1469
0.20041	0.81685	90	0.422222	845	0.472189	0.46738	1.63938	1	0	D8S1695
0.666936	0.921986	90	0.216667	845	0.230769	0.229412	0.185207	1	8	D8S1695
0.007851	2.01962	90	0.122222	845	0.064497	0.070054	7.06711	1	6	D8S1695
0.891445	1.04602	90	0.061111	845	0.0585799	0.058824	0.018626	1	10	D8S1695
0.67357	0.899543	90	0.105556	845	0.115976	0.114973	0.177455	1	4	D8S1695
0.167565	1.7815	90	0.044445	845	0.0254438	0.027273	1.9046	1	12	D8S1695
0.935689	1.04419	90	0.022222	845	0.0213018	0.02139	0.006511	1	2	D8S1695
0.968082	1.04345	90	0.005556	845	0.0053254	0.005348	0.001601	1	14	D8S1695
0.233447	3.37E-13	90	1.40E-15	845	0.004142	0.003743	1.41974	1	16	D8S1695
0.524484	4.71E-13	90	5.58E-16	845	0.0011834	0.00107	0.405068	1	-4	D8S1695
0.652729	1.90E-10	90	1.12E-13	845	0.0005917	0.000535	0.202477	1	9	D8S1695
0.348647	0.840511	96	0.213542	643	0.244168	0.240189	0.878374	1	34	D8S1721
0.152584	0.50491	96	0.020833	643	0.0404355	0.037889	2.04623	1	36	D8S1721
0.916389	1.01665	96	0.411458	643	0.407465	0.407984	0.011021	1	0	D8S1721
0.785034	0.937634	96	0.119792	643	0.12675	0.125846	0.074401	1	2	D8S1721
0.064966	1.54723	96	0.140625	643	0.0956454	0.101488	3.40584	1	4	D8S1721
0.565421	0.666315	96	0.010417	643	0.0155521	0.014885	0.330405	1	8	D8S1721
0.084188	1.79531	96	0.067708	643	0.0388802	0.042625	2.98213	1	24	D8S1721
0.807385	0.835523	96	0.010417	643	0.0124417	0.012179	0.059439	1	32	D8S1721
0.479937	0.512687	96	0.005208	643	0.0101089	0.009472	0.499006	1	38	D8S1721
0.23772	1.71E-12	96	6.69E-15	643	0.003888	0.003383	1.39406	1	28	D8S1721
0.597747	4.11E-11	96	3.20E-14	643	0.0007776	0.000677	0.278407	1	6	D8S1721
0.597747	4.11E-11	96	3.20E-14	643	0.0007776	0.000677	0.278407	1	-4	D8S1721
0.360592	8.65E-12	96	2.02E-14	643	0.0023328	0.00203	0.83583	1	30	D8S1721
0.597747	4.11E-11	96	3.20E-14	643	0.0007776	0.000677	0.278407	1	-2	D8S1721
0.142602	0.801487	101	0.564356	866	0.617783	0.612203	2.14965	1	0	D8S1759
0.397877	0.793563	101	0.074258	866	0.0918014	0.089969	0.714734	1	2	D8S1759
0.466242	1.40237	101	0.029703	866	0.0213626	0.022234	0.530869	1	6	D8S1759
0.07637	1.62526	101	0.094059	866	0.0600462	0.063599	3.1405	1	4	D8S1759
0.357415	1.22571	101	0.138614	866	0.116051	0.118407	0.846955	1	12	D8S1759
0.33652	1.34288	101	0.069307	866	0.0525404	0.054292	0.923645	1	10	D8S1759
0.544336	0.656155	101	0.009901	866	0.0150115	0.014478	0.367562	1	14	D8S1759
0.504658	0.533584	101	0.004951	866	0.0092379	0.00879	0.445127	1	16	D8S1759
0.962661	1.02935	101	0.014852	866	0.0144342	0.014478	0.002192	1	8	D8S1759
0.415705	4.59E-12	101	7.96E-15	866	0.0017321	0.001551	0.662425	1	-2	D8S1759
0.373568	1.18012	63	0.5	702	0.458689	0.462092	0.791763	1	0	D8S1825
0.322396	0.685215	63	0.055556	702	0.0790598	0.077124	0.9792	1	8	D8S1825
0.593823	1.15537	63	0.142857	702	0.126068	0.127451	0.284413	1	10	D8S1825
0.093314	0.649083	63	0.134921	702	0.193732	0.188889	2.81625	1	6	D8S1825
0.495342	1.216	63	0.126984	702	0.106838	0.108497	0.464902	1	2	D8S1825
0.680675	1.59857	63	0.007936	702	0.0049858	0.005229	0.169367	1	-2	D8S1825
0.25365	1.96863	63	0.031746	702	0.0163818	0.017647	1.30309	1	4	D8S1825
0.353489	1.48E-11	63	5.28E-14	702	0.0035613	0.003268	0.860894	1	-1	D8S1825
0.119951	4.40E-11	63	4.43E-13	702	0.0099715	0.00915	2.41796	1	12	D8S1825
0.67839	1.14E-11	63	8.13E-15	702	0.0007123	0.000654	0.171944	1	14	D8S1825
0.317308	1.18665	79	0.398734	841	0.358502	0.361957	1.00001	1	4	D8S265
0.11626	1.40175	79	0.202532	841	0.153389	0.157609	2.467	1	0	D8S265
0.019755	2.24E-11	79	4.07E-13	841	0.0178359	0.016304	5.4334	1	6	D8S265
0.265927	0.686637	79	0.056962	841	0.0808561	0.078804	1.23764	1	-5	D8S265
0.260573	0.757916	79	0.120253	841	0.152794	0.15	1.26571	1	2	D8S265
0.672194	0.877854	79	0.075949	841	0.0856124	0.084783	0.179047	1	18	D8S265
0.757312	1.12702	79	0.050633	841	0.0451843	0.045652	0.095489	1	12	D8S265

Fig. 11D2

0.790552	1.07922	79	0.094937	841	0.088585	0.08913	0.07054	1	14	D8S265
0.671704	2.16E-10	79	1.29E-13	841	0.0005945	0.000543	0.179615	1	-3	D8S265
0.079875	2.92E-12	79	2.98E-14	841	0.010107	0.009239	3.06744	1	16	D8S265
0.343023	3.46E-12	79	1.03E-14	841	0.0029727	0.002717	0.899099	1	8	D8S265
0.462784	1.45E-12	79	2.60E-15	841	0.0017836	0.00163	0.539152	1	10	D8S265
0.671704	2.16E-10	79	1.29E-13	841	0.0005945	0.000543	0.179615	1	20	D8S265
0.671704	2.16E-10	79	1.29E-13	841	0.0005945	0.000543	0.179615	1	1	D8S265
0.671704	2.16E-10	79	1.29E-13	841	0.0005945	0.000543	0.179615	1	-4	D8S265
0.700978	1.12637	64	0.101562	762	0.0912074	0.09201	0.147457	1	0	D8S351
0.160376	1.35485	64	0.257812	762	0.204068	0.208232	1.97068	1	18	D8S351
0.140611	1.36696	64	0.273438	762	0.215879	0.220339	2.17126	1	2	D8S351
0.0828	0.610815	64	0.101563	762	0.156168	0.151937	3.00906	1	6	D8S351
0.087491	1.42E-11	64	1.70E-13	762	0.011811	0.010896	2.91993	1	10	D8S351
0.329101	0.689311	64	0.054687	762	0.0774278	0.075666	0.952431	1	8	D8S351
0.714128	0.844366	64	0.039063	762	0.0459318	0.0454	0.134188	1	20	D8S351
0.475253	0.758494	64	0.054688	762	0.0708661	0.069613	0.509735	1	4	D8S351
0.627473	1.16309	64	0.101563	762	0.0885827	0.089588	0.235503	1	16	D8S351
0.230432	0.355762	64	0.007812	762	0.0216535	0.020581	1.43819	1	14	D8S351
0.132055	1.12E-12	64	1.03E-14	762	0.0091864	0.008475	2.26817	1	12	D8S351
0.641023	1.70641	64	0.007813	762	0.0045932	0.004843	0.217407	1	-2	D8S351
0.421546	1.39E-10	64	3.67E-13	762	0.0026247	0.002421	0.646001	1	22	D8S351
0.720445	0.943516	96	0.322917	825	0.335758	0.334419	0.128067	1	-6	D8S503
0.650243	0.928762	96	0.317708	825	0.333939	0.332248	0.205594	1	0	D8S503
0.368534	1.19191	96	0.197917	825	0.171515	0.174267	0.8086	1	-2	D8S503
0.55512	0.814091	96	0.046875	825	0.0569697	0.055918	0.348225	1	-4	D8S503
0.776741	0.885429	96	0.03125	825	0.0351515	0.034745	0.080411	1	2	D8S503
0.143381	1.53953	96	0.083333	825	0.0557576	0.058632	2.14129	1	-8	D8S503
0.416197	9.71E-12	96	1.77E-14	825	0.0018182	0.001629	0.661029	1	-10	D8S503
0.158706	3.62E-12	96	1.98E-14	825	0.0054546	0.004886	1.98651	1	4	D8S503
0.250019	8.33E-13	96	3.04E-15	825	0.0036364	0.003257	1.3232	1	-12	D8S503
0.026569	0.718366	101	0.50495	876	0.586758	0.578301	4.91662	1	2	D8S516
0.12838	1.30831	101	0.247525	876	0.200913	0.205732	2.31198	1	4	D8S516
0.351225	1.2526	101	0.113861	876	0.0930365	0.095189	0.869025	1	0	D8S516
0.804679	1.06406	101	0.09901	876	0.0936073	0.094166	0.061155	1	-2	D8S516
0.624055	1.37502	101	0.014851	876	0.0108448	0.011259	0.240209	1	-4	D8S516
0.262284	0.373998	101	0.00495	876	0.0131279	0.012283	1.25666	1	6	D8S516
0.014431	8.78888	101	0.014851	876	0.0017123	0.003071	5.98463	1	8	D8S516
0.147569	1.2585	95	0.415789	663	0.381237	0.368074	2.0972	1	6	D8S520
0.079351	0.702699	95	0.163158	663	0.217195	0.210422	3.07815	1	8	D8S520
0.07372	0.236635	95	0.005263	663	0.0218703	0.019789	3.19818	1	10	D8S520
0.454748	1.19606	95	0.126316	663	0.107843	0.110158	0.558791	1	0	D8S520
0.681499	0.875169	95	0.057895	663	0.0656109	0.064644	0.168443	1	-10	D8S520
0.155991	1.39865	95	0.136842	663	0.10181	0.106201	2.01267	1	4	D8S520
0.119945	7.46E-12	95	5.10E-14	663	0.0067873	0.005937	2.41804	1	-12	D8S520
0.643367	0.886546	95	0.094737	663	0.105581	0.104222	0.214366	1	2	D8S520
0.081455	3.16E-16	95	3.13E-18	663	0.0098039	0.008575	3.49769	1	-2	D8S520
0.46409	1.17E-13	95	1.77E-16	663	0.0015083	0.001319	0.536012	1	12	D8S520
0.604736	9.35E-12	95	7.06E-15	663	0.0007541	0.00066	0.267911	1	9	D8S520
0.160754	0.808303	97	0.474227	840	0.527381	0.521878	1.96712	1	0	D8S542
0.554142	0.907693	97	0.304124	840	0.325	0.322839	0.349949	1	2	D8S542
0.007528	1.67593	97	0.22165	840	0.145238	0.153148	7.14237	1	4	D8S542
0.417889	1.77E-10	97	3.16E-13	840	0.0017857	0.001601	0.656244	1	-2	D8S542
0.64009	4.66E-14	97	2.78E-17	840	0.0005952	0.000534	0.218624	1	-12	D8S542
0.709164	1.10417	93	0.096774	814	0.0884521	0.089305	0.139113	1	-8	D8S550
0.820119	1.05534	93	0.123656	814	0.117936	0.118523	0.051707	1	12	D8S550
0.07782	0.726739	93	0.22043	814	0.280098	0.27398	3.10985	1	14	D8S550
0.170811	0.72134	93	0.107527	814	0.14312	0.139471	1.87581	1	-2	D8S550
0.064467	2.12756	93	0.048387	814	0.0233415	0.02591	3.41856	1	8	D8S550
0.097575	1.77163	93	0.064516	814	0.0374693	0.040243	2.74473	1	18	D8S550
0.55045	0.826982	93	0.05914	814	0.0706388	0.06946	0.356512	1	-6	D8S550
0.487631	1.19986	93	0.102151	814	0.0866093	0.088203	0.481749	1	16	D8S550
0.656014	1.14821	93	0.069893	814	0.0614251	0.062293	0.198401	1	0	D8S550
0.395481	1.28543	93	0.080645	814	0.0638821	0.065601	0.722025	1	10	D8S550
0.162329	6.71E-12	93	3.73E-14	814	0.0055283	0.004961	1.9524	1	2	D8S550
0.343372	1.63802	93	0.026882	814	0.0165848	0.017641	0.897801	1	20	D8S550
0.51053	1.09E-10	93	1.35E-13	814	0.0012285	0.001103	0.43298	1	6	D8S550
0.351936	2.92E-14	93	7.19E-17	814	0.002457	0.002205	0.866466	1	22	D8S550
0.51053	1.09E-10	93	1.35E-13	814	0.0012285	0.001103	0.43298	1	4	D8S550
0.136893	0.656779	27	0.5	391	0.603581	0.59689	2.21254	1	1	DG00AAHBG
0.136893	1.52258	27	0.5	391	0.396419	0.40311	2.21254	1	2	DG00AAHBG
0.300119	0.81773	66	0.659091	725	0.702759	0.699115	1.07366	1	2	DG00AAHBH
0.300119	1.2229	66	0.340909	725	0.297241	0.300885	1.07366	1	1	DG00AAHBH
0.247129	0.797863	62	0.629032	811	0.680025	0.676403	1.33946	1	3	DG00AAHBI
0.247129	1.25335	62	0.370968	811	0.319975	0.323597	1.33946	1	1	DG00AAHBI
0.259878	1.25165	86	0.232558	531	0.194915	0.200162	1.26941	1	0	DG8S117
0.259878	0.798948	86	0.767442	531	0.805085	0.799838	1.26941	1	9	DG8S117
0.949601	0.983559	101	0.910891	826	0.912228	0.912082	0.003995	1	0	DG8S118
0.949601	1.01672	101	0.089109	826	0.0877724	0.087918	0.003995	1	5	DG8S118
0.247725	0.826649	87	0.396552	604	0.442881	0.437048	1.33609	1	0	DG8S127
0.51935	0.845888	87	0.103448	604	0.120033	0.117945	0.415183	1	6	DG8S127
0.09682	1.30975	87	0.5	604	0.432947	0.441389	2.75716	1	1	DG8S127
0.245581	8.27E-12	87	3.44E-14	604	0.0041391	0.003618	1.34827	1	2	DG8S127

FIG. 11D3

0.677323	0.92813	93	0.736559	646	0.750774	0.748985	0.173155	1	0	DG8S128
0.677323	1.07744	93	0.263441	646	0.249226	0.251015	0.173155	1	4	DG8S128
0.610112	0.920497	92	0.353261	772	0.372409	0.37037	0.260012	1	4	DG8S130
0.334773	0.860241	92	0.5	772	0.537565	0.533565	0.930347	1	0	DG8S130
0.002632	2.62787	92	0.086957	772	0.0349741	0.040509	9.04617	1	-16	DG8S130
0.986165	0.987072	92	0.01087	772	0.0110104	0.010995	0.000301	1	-4	DG8S130
0.664976	1.18581	92	0.043478	772	0.0369171	0.037616	0.187536	1	8	DG8S130
0.244659	6.34E-13	92	2.47E-15	772	0.003886	0.003472	1.35355	1	-12	DG8S130
0.291287	4.2132	92	0.005435	772	0.0012953	0.001736	1.11366	1	12	DG8S130
0.410915	2.49E-11	92	4.84E-14	772	0.001943	0.001736	0.676151	1	-8	DG8S130
0.71498	1.08295	98	0.862245	739	0.852503	0.853644	0.133354	1	0	DG8S134
0.592821	0.888749	98	0.132653	739	0.14682	0.145161	0.285961	1	4	DG8S134
0.183435	7.57436	98	0.005102	739	0.0006766	0.001195	1.76957	1	2	DG8S134
0.774126	1.04852	92	0.668478	779	0.657895	0.659013	0.082359	1	0	DG8S136
0.986516	1.00499	92	0.076087	779	0.0757381	0.075775	0.000286	1	-6	DG8S136
0.803865	1.09048	92	0.054348	779	0.0500642	0.050517	0.061677	1	2	DG8S136
0.641268	0.84886	92	0.048913	779	0.0571245	0.056257	0.217088	1	-4	DG8S136
0.940311	1.02503	92	0.059783	779	0.0584082	0.058553	0.005607	1	4	DG8S136
0.39935	0.705966	92	0.032609	779	0.0455712	0.044202	0.710282	1	6	DG8S136
0.251291	0.532856	92	0.016304	779	0.0301669	0.028703	1.31611	1	-2	DG8S136
0.412203	1.52634	92	0.027174	779	0.0179718	0.018944	0.672438	1	8	DG8S136
0.290348	3.25E-12	92	1.05E-14	779	0.0032092	0.00287	1.11801	1	-8	DG8S136
0.288632	4.2514	92	0.005435	779	0.0012837	0.001722	1.12599	1	10	DG8S136
0.636514	4.82E-11	92	3.09E-14	779	0.0006418	0.000574	0.22333	1	-10	DG8S136
0.08618	5.69597	92	0.01087	779	0.0019256	0.00287	2.84432	1	-14	DG8S136
0.131675	0.554385	19	0.210526	234	0.324786	0.316206	2.27265	1	-2	DG8S137
0.24739	1.87447	19	0.131579	234	0.0747863	0.079051	1.33798	1	2	DG8S137
0.971193	1.02778	19	0.052632	234	0.0512821	0.051383	0.001304	1	10	DG8S137
0.753076	0.825975	19	0.078947	234	0.0940171	0.092885	0.098965	1	4	DG8S137
0.616114	1.29561	19	0.131579	234	0.104701	0.106719	0.251367	1	6	DG8S137
0.470942	1.46006	19	0.131579	234	0.0940171	0.096838	0.519764	1	-4	DG8S137
0.558647	0.780845	19	0.184211	234	0.224359	0.221344	0.342052	1	0	DG8S137
0.697516	1.55406	19	0.026316	234	0.017094	0.017787	0.151068	1	12	DG8S137
0.193815	6.29729	19	0.026316	234	0.0042735	0.005929	1.68838	1	18	DG8S137
0.692589	1.98E-10	19	4.23E-13	234	0.0021368	0.001976	0.156297	1	14	DG8S137
0.428411	1.33E-11	19	1.14E-13	234	0.008547	0.007905	0.627129	1	8	DG8S137
0.022558	108030	19	0.026313	234	2.50E-07	0.001976	5.20224	1	16	DG8S137
0.059505	0.607662	91	0.082418	761	0.128778	0.123826	3.55114	1	-1	DG8S138
0.056362	1.65529	91	0.917582	761	0.870565	0.875587	3.64134	1	0	DG8S138
0.634523	4.06E-10	91	2.67E-13	761	0.000657	0.000587	0.225977	1	1	DG8S138
0.992623	1.00158	81	0.401235	585	0.400855	0.400901	8.55E-05	1	0	DG8S147
0.990781	1.00198	81	0.598765	585	0.598291	0.598348	0.000134	1	2	DG8S147
0.610492	1.11E-12	81	9.53E-16	585	0.0008547	0.000751	0.25946	1	1	DG8S147
0.306745	0.715394	97	0.051546	694	0.0706052	0.068268	1.04464	1	-4	DG8S148
0.189157	1.24392	97	0.324742	694	0.278818	0.28445	1.72417	1	2	DG8S148
0.023262	0.644275	97	0.170103	694	0.241354	0.232617	5.14887	1	-2	DG8S148
0.486186	1.11554	97	0.402062	694	0.376081	0.379267	0.484957	1	0	DG8S148
0.499249	1.31378	97	0.041237	694	0.0317003	0.03287	0.456533	1	4	DG8S148
0.003727	78879.2	97	0.010308	694	1.32E-07	0.001264	8.41214	1	6	DG8S148
0.469286	5.48E-11	97	7.91E-14	694	0.0014409	0.001264	0.523658	1	-17	DG8S148
0.113102	1.39634	50	0.51	473	0.427061	0.43499	2.51033	1	-2	DG8S153
0.755554	0.90203	50	0.11	473	0.120507	0.119503	0.096923	1	0	DG8S153
0.630406	0.626936	50	0.01	473	0.0158562	0.015296	0.231511	1	-6	DG8S153
0.693522	0.815219	50	0.04	473	0.0486258	0.047801	0.155299	1	2	DG8S153
0.843493	0.938637	50	0.12	473	0.12685	0.126195	0.038978	1	6	DG8S153
0.836	1.13938	50	0.03	473	0.0264271	0.026769	0.042854	1	14	DG8S153
0.081855	0.540989	50	0.08	473	0.138478	0.132887	3.02767	1	8	DG8S153
0.940056	1.03404	50	0.06	473	0.0581395	0.058317	0.005655	1	10	DG8S153
0.934189	1.05269	50	0.03	473	0.0285412	0.028681	0.006819	1	4	DG8S153
0.315528	1.24E-11	50	6.58E-14	473	0.0052854	0.00478	1.0074	1	12	DG8S153
0.480374	2.37881	50	0.01	473	0.0042283	0.00478	0.498013	1	-4	DG8S153
0.691922	0.906871	43	0.290698	453	0.311258	0.309476	0.157012	1	4	DG8S155
0.260822	1.47027	43	0.139535	453	0.0993377	0.102823	1.26439	1	8	DG8S155
0.980677	0.990648	43	0.093023	453	0.093819	0.09375	0.000587	1	2	DG8S155
0.316582	0.759107	43	0.197674	453	0.245033	0.240927	1.00302	1	6	DG8S155
0.613999	1.38763	43	0.034884	453	0.0253863	0.02621	0.254392	1	14	DG8S155
0.45664	1.29768	43	0.127907	453	0.101545	0.103831	0.554118	1	0	DG8S155
0.682666	0.825983	43	0.058139	453	0.0695364	0.068548	0.16714	1	10	DG8S155
0.319621	0.515476	43	0.023256	453	0.0441501	0.042339	0.990498	1	12	DG8S155
0.128687	10.6473	43	0.011628	453	0.0011037	0.002016	2.30827	1	-18	DG8S155
0.331856	3.54119	43	0.011628	453	0.0033113	0.004032	0.941641	1	-10	DG8S155
0.670119	8.40E-13	43	9.28E-16	453	0.0011038	0.001008	0.181463	1	-2	DG8S155
0.460382	1.52E-11	43	5.04E-14	453	0.0033113	0.003024	0.544966	1	16	DG8S155
0.128687	10.6473	43	0.011628	453	0.0011037	0.002016	2.30827	1	-12	DG8S155
0.40513	1.14371	89	0.41573	777	0.383526	0.386836	0.693046	1	6	DG8S156
0.245044	0.83143	89	0.522472	777	0.568211	0.56351	1.35134	1	0	DG8S156
0.20887	1.63567	89	0.050562	777	0.0315315	0.033487	1.57924	1	-6	DG8S156
0.401222	2.9209	89	0.005618	777	0.0019305	0.002309	0.704662	1	3	DG8S156
0.265718	0.376077	89	0.005618	777	0.0148005	0.013857	1.23872	1	9	DG8S156
0.33947	0.732904	82	0.920732	556	0.940647	0.938088	0.912432	1	0	DG8S159
0.475481	1.29748	82	0.060976	556	0.0476619	0.049373	0.509211	1	-2	DG8S159
0.502159	1.57525	82	0.018293	556	0.0116906	0.012539	0.450371	1	2	DG8S159

FIG. 11D4

0.365296	0.8673	95	0.389474	735	0.42381	0.41988	0.819604	1	0	DG8S161
0.365296	1.153	95	0.610526	735	0.57619	0.58012	0.819604	1	2	DG8S161
0.104578	1.27982	97	0.530928	815	0.469325	0.475877	2.6343	1	0	DG8S163
0.104578	0.781357	97	0.469072	815	0.530675	0.524123	2.6343	1	3	DG8S163
0.616405	1.09015	83	0.349398	759	0.33004	0.331948	0.250952	1	0	DG8S170
0.438895	0.877032	83	0.620482	759	0.650856	0.647862	0.599168	1	2	DG8S170
0.413258	1.60494	83	0.024096	759	0.0151515	0.016033	0.66941	1	-4	DG8S170
0.266779	4.59391	83	0.006024	759	0.0013175	0.001781	1.23323	1	-19	DG8S170
0.519255	9.02E-11	83	1.19E-13	759	0.0013175	0.001188	0.415373	1	-8	DG8S170
0.519255	9.02E-11	83	1.19E-13	759	0.0013175	0.001188	0.415373	1	-2	DG8S170
0.139776	0.791041	95	0.378947	643	0.435459	0.428184	2.18043	1	14	DG8S177
0.693639	0.675133	95	0.005263	643	0.0077761	0.007453	0.155174	1	20	DG8S177
0.364696	1.17506	95	0.268421	643	0.237947	0.24187	0.821658	1	12	DG8S177
0.653875	1.12247	95	0.105263	643	0.0948678	0.096206	0.201049	1	18	DG8S177
0.457666	9.87E-11	95	1.54E-13	643	0.0015552	0.001355	0.551597	1	2	DG8S177
0.880841	0.951725	95	0.057895	643	0.0606532	0.060298	0.022471	1	0	DG8S177
0.82908	1.05125	95	0.131579	643	0.125972	0.126694	0.046605	1	16	DG8S177
0.278312	1.49758	95	0.052632	643	0.0357698	0.03794	1.17531	1	10	DG8S177
0.724908	0.944594	87	0.511494	622	0.525723	0.523977	0.123839	1	0	DG8S179
0.724908	1.05866	87	0.488506	622	0.474277	0.476023	0.123839	1	7	DG8S179
0.762507	0.948204	95	0.263158	625	0.2736	0.272222	0.091319	1	10	DG8S181
0.143746	0.763986	95	0.21579	625	0.2648	0.258333	2.1374	1	12	DG8S181
0.095135	0.638224	95	0.078947	625	0.1184	0.113194	2.78526	1	4	DG8S181
0.180075	1.39938	95	0.121053	625	0.0896	0.09375	1.79701	1	0	DG8S181
0.08582	1.43454	95	0.184211	625	0.136	0.142361	2.95109	1	8	DG8S181
0.506027	1.47192	95	0.021053	625	0.0144	0.015278	0.442274	1	16	DG8S181
0.846265	0.91141	95	0.026316	625	0.0288	0.028472	0.037592	1	18	DG8S181
0.624977	1.1672	95	0.068421	625	0.0592	0.060417	0.238934	1	14	DG8S181
0.205305	3.31384	95	0.010526	625	0.0032	0.004167	1.60423	1	-2	DG8S181
0.84956	0.821429	95	0.005263	625	0.0064	0.00625	0.035978	1	2	DG8S181
0.953238	0.93953	95	0.005263	625	0.0056	0.005556	0.003439	1	6	DG8S181
0.351987	0.752231	68	0.897059	818	0.920538	0.918736	0.866281	1	0	DG8S182
0.351987	1.32938	68	0.102941	818	0.0794621	0.081264	0.866281	1	-3	DG8S182
0.457958	0.867661	81	0.734568	641	0.76131	0.75831	0.550882	1	0	DG8S188
0.457958	1.15252	81	0.265432	641	0.23869	0.24169	0.550882	1	-1	DG8S188
0.419757	1.1713	59	0.59322	568	0.554577	0.558214	0.650995	1	0	DG8S192
0.51537	1.17558	59	0.194915	568	0.170775	0.173046	0.423149	1	2	DG8S192
0.207352	0.338217	59	0.008475	568	0.0246479	0.023126	1.58982	1	16	DG8S192
0.245975	0.658408	59	0.067797	568	0.0994718	0.096491	1.34602	1	-2	DG8S192
0.677246	1.16807	59	0.076271	568	0.0660211	0.066986	0.173242	1	4	DG8S192
0.319662	2.38E-12	59	1.05E-14	568	0.0044014	0.003987	0.990328	1	8	DG8S192
0.57227	0.800065	59	0.059322	568	0.0730634	0.07177	0.318899	1	12	DG8S192
0.529354	1.62E-13	59	2.87E-16	568	0.0017606	0.001595	0.395632	1	-4	DG8S192
0.373517	7.84E-11	59	2.77E-13	568	0.0035211	0.00319	0.791929	1	10	DG8S192
0.529354	1.62E-13	59	2.87E-16	568	0.0017606	0.001595	0.395632	1	14	DG8S192
0.021783	0.700803	97	0.546392	730	0.632192	0.622128	5.26301	1	0	DG8S197
0.021783	1.42694	97	0.453608	730	0.367808	0.377872	5.26301	1	1	DG8S197
0.092803	1.29436	98	0.566327	677	0.502216	0.510323	2.82506	1	0	DG8S201
0.935151	0.98689	98	0.331633	677	0.334564	0.334194	0.00662	1	4	DG8S201
0.021273	0.54752	98	0.076531	677	0.131462	0.124516	5.30432	1	-2	DG8S201
0.628116	0.798125	98	0.02551	677	0.0317578	0.030968	0.234624	1	2	DG8S201
0.779148	0.906211	97	0.948454	735	0.953061	0.952524	0.078641	1	0	DG8S212
0.779148	1.1035	97	0.051546	735	0.0469388	0.047476	0.078641	1	2	DG8S212
0.501767	0.866166	53	0.613207	392	0.646684	0.642697	0.451197	1	4	DG8S215
0.469316	1.1675	53	0.386792	392	0.350765	0.355056	0.523585	1	0	DG8S215
0.476067	6.32E-11	53	1.62E-13	392	0.002551	0.002247	0.507858	1	2	DG8S215
0.049325	1.4219	83	0.445783	292	0.361301	0.38	3.86426	1	0	DG8S221
0.492758	1.14224	83	0.301205	292	0.273973	0.28	0.470498	1	5	DG8S221
0.001985	0.416254	83	0.078313	292	0.169521	0.149333	9.56296	1	-2	DG8S221
0.357409	0.668952	83	0.036145	292	0.0530822	0.049333	0.846976	1	7	DG8S221
0.922396	0.974125	83	0.120482	292	0.123288	0.122667	0.00949	1	4	DG8S221
0.868514	0.878049	83	0.012048	292	0.0136986	0.013333	0.027406	1	1	DG8S221
0.479182	4.03E-11	83	6.91E-14	292	0.0017123	0.001333	0.500724	1	8	DG8S221
0.655811	1.76363	83	0.006024	292	0.0034247	0.004	0.198652	1	-1	DG8S221
0.787685	1.04516	94	0.340426	726	0.330578	0.331707	0.072532	1	0	DG8S232
0.458787	1.12444	94	0.409575	726	0.381543	0.384756	0.548901	1	2	DG8S232
0.053827	0.622749	94	0.095745	726	0.145317	0.139634	3.71606	1	-8	DG8S232
0.695287	1.11362	94	0.090426	726	0.0819559	0.082927	0.153421	1	-4	DG8S232
0.965139	0.982323	94	0.037234	726	0.0378788	0.037805	0.00191	1	4	DG8S232
0.519055	1.38954	94	0.026596	726	0.0192837	0.020122	0.41577	1	-2	DG8S232
0.621627	8.43E-13	94	5.81E-16	726	0.0006887	0.00061	0.243588	1	-6	DG8S232
0.323362	1.26E-10	94	3.48E-13	726	0.0027548	0.002439	0.9753	1	6	DG8S232
0.030967	2.01171	96	0.953125	672	0.90997	0.915365	4.6548	1	0	DG8S238
0.030967	0.497086	96	0.046875	672	0.0900298	0.084635	4.6548	1	-8	DG8S238
0.120276	0.73024	57	0.570176	476	0.644958	0.636961	2.41372	1	4	DG8S242
0.120276	1.36941	57	0.429825	476	0.355042	0.363039	2.41372	1	0	DG8S242
0.130702	1.55627	93	0.930108	468	0.895299	0.90107	2.28415	1	0	DG8S245
0.926667	0.969323	93	0.05914	468	0.0608974	0.060606	0.008471	1	-4	DG8S245
0.019055	0.25	93	0.010753	468	0.0416667	0.036542	5.4965	1	4	DG8S245
0.394274	4.62E-11	93	9.90E-14	468	0.0021368	0.001783	0.72572	1	-8	DG8S245
0.326233	0.851099	84	0.529762	682	0.569648	0.565274	0.963792	1	0	DG8S249
0.396524	1.19007	84	0.208333	682	0.181085	0.184073	0.718843	1	-19	DG8S249

FIG. 11D5

0.92549	1.06008	84	0.017857	682	0.0168622	0.016971	0.008746	1	-17	DG8S249
0.278027	0.382948	84	0.005952	682	0.0153959	0.01436	1.17671	1	-21	DG8S249
0.901316	0.966221	84	0.095238	682	0.0982405	0.097911	0.015376	1	-2	DG8S249
0.701106	1.35743	84	0.011905	682	0.0087977	0.009138	0.147323	1	6	DG8S249
0.356731	1.39991	84	0.059524	682	0.0432551	0.045039	0.849367	1	2	DG8S249
0.020299	3.87E-12	84	6.64E-14	682	0.0168622	0.015013	5.386	1	-6	DG8S249
0.95049	0.95464	84	0.011905	682	0.0124633	0.012402	0.003855	1	4	DG8S249
0.094561	1.89873	84	0.059524	682	0.0322581	0.035248	2.79496	1	-4	DG8S249
0.201691	1.05E-11	84	5.43E-14	682	0.005132	0.004569	1.63009	1	-1	DG8S249
0.394709	1.31798	96	0.067708	584	0.052226	0.054412	0.724387	1	-10	DG8S250
0.354176	0.841246	96	0.213542	584	0.244007	0.239706	0.85844	1	-4	DG8S250
0.668478	1.10211	96	0.140625	584	0.129281	0.130882	0.183387	1	2	DG8S250
0.278992	1.22976	96	0.223958	584	0.190068	0.194853	1.17199	1	4	DG8S250
0.481973	1.23503	96	0.078125	584	0.0642123	0.066177	0.494395	1	-2	DG8S250
0.075071	0.71287	96	0.192708	584	0.250856	0.242647	3.16851	1	0	DG8S250
0.896366	1.10718	96	0.010417	584	0.0094178	0.009559	0.016966	1	8	DG8S250
0.078427	2.81235	96	0.026042	584	0.0094178	0.011765	3.0972	1	-8	DG8S250
0.695254	0.790201	96	0.015625	584	0.0196918	0.019118	0.153456	1	6	DG8S250
0.760007	1.22011	96	0.015625	584	0.0128425	0.013235	0.093313	1	-12	DG8S250
0.90986	1.0747	96	0.015625	584	0.0145548	0.014706	0.012818	1	-6	DG8S250
0.269464	7.68E-14	96	2.64E-16	584	0.0034247	0.002941	1.21947	1	12	DG8S250
0.751011	0.949842	92	0.619565	680	0.631618	0.630181	0.100683	1	0	DG8S257
0.770454	1.11429	92	0.048913	680	0.0441176	0.044689	0.085136	1	-6	DG8S257
0.95864	1.00924	92	0.315217	680	0.313235	0.313472	0.002956	1	-2	DG8S257
0.942723	1.05652	92	0.01087	680	0.0102941	0.010363	0.005162	1	2	DG8S257
0.187243	7.42615	92	0.005435	680	0.0007353	0.001295	1.73918	1	-9	DG8S257
0.599971	1.11205	83	0.216867	637	0.199372	0.201389	0.275039	1	15	DG8S258
0.208266	1.23457	83	0.602409	637	0.55102	0.556944	1.58344	1	18	DG8S258
0.047074	1.80E-15	83	2.29E-17	637	0.0125589	0.011111	3.94276	1	0	DG8S258
0.048887	0.650118	83	0.150602	637	0.214286	0.206944	3.87924	1	12	DG8S258
0.483799	3.57E-11	83	5.61E-14	637	0.0015699	0.001389	0.490289	1	24	DG8S258
0.706939	1.23358	83	0.024096	637	0.0196232	0.020139	0.141353	1	21	DG8S258
0.483799	3.57E-11	83	5.61E-14	637	0.0015699	0.001389	0.490289	1	33	DG8S258
0.037537	58362.2	83	0.006023	637	1.04E-07	0.000694	4.3259	1	11	DG8S258
0.759909	0.936597	57	0.692982	549	0.70674	0.705446	0.093391	1	2	DG8S261
0.759909	1.06769	57	0.307018	549	0.29326	0.294554	0.093391	1	0	DG8S261
0.969404	1.02076	55	0.036364	561	0.0356506	0.035714	0.001471	1	-4	DG8S262
0.583866	0.921811	55	0.509091	561	0.529412	0.527597	0.165808	1	0	DG8S262
0.843058	0.931097	55	0.081818	561	0.087344	0.086851	0.039197	1	-10	DG8S262
0.216881	1.32844	55	0.272727	561	0.220143	0.224838	1.52489	1	2	DG8S262
0.603723	0.739227	55	0.027273	561	0.0365419	0.035714	0.269417	1	-2	DG8S262
0.767637	0.880436	55	0.054546	561	0.0814973	0.060877	0.087301	1	4	DG8S262
0.86772	1.1358	55	0.018182	561	0.0160428	0.016234	0.027741	1	6	DG8S262
0.150491	8.87E-13	55	8.79E-15	561	0.0098039	0.008929	2.06726	1	-14	DG8S262
0.386639	2.81E-11	55	1.01E-13	561	0.0035651	0.003247	0.749485	1	8	DG8S262
0.233927	1.24619	97	0.231959	751	0.195073	0.199292	1.41682	1	15	DG8S265
0.823939	1.03482	97	0.56701	751	0.558589	0.559552	0.049498	1	18	DG8S265
0.031167	2.75E-12	97	3.53E-14	751	0.0126498	0.011203	4.64376	1	0	DG8S265
0.189591	0.772375	97	0.170103	751	0.20972	0.205189	1.7208	1	12	DG8S265
0.473203	1.44523	97	0.025773	751	0.017976	0.018868	0.514486	1	21	DG8S265
0.485625	4.63E-11	97	6.17E-14	751	0.0013316	0.001179	0.486205	1	33	DG8S265
0.925649	1.10659	97	0.005155	751	0.0046605	0.004717	0.008709	1	-6	DG8S265
0.631697	1.08177	85	0.476471	615	0.456911	0.459288	0.229767	1	-2	DG8S266
0.777865	0.954415	85	0.423529	615	0.434959	0.433571	0.079582	1	0	DG8S266
0.74591	0.916458	85	0.1	615	0.10813	0.107143	0.105	1	-4	DG8S266
0.484424	1.11477	97	0.417526	741	0.391363	0.394391	0.488888	1	-4	DG8S269
0.111271	0.783298	97	0.520619	741	0.580972	0.573986	2.53608	1	0	DG8S269
0.020752	2.31734	97	0.061856	741	0.0276653	0.031623	5.34751	1	-5	DG8S269
0.012522	0.536447	50	0.19	567	0.304233	0.294976	6.23539	1	-2	DG8S271
0.096503	1.44289	50	0.69	567	0.606702	0.613452	2.7624	1	0	DG8S271
0.673308	1.16162	50	0.1	567	0.0873016	0.088331	0.177756	1	2	DG8S271
0.027247	11.5511	50	0.02	567	0.0017637	0.003241	4.87506	1	4	DG8S271
0.201722	2.20843	95	0.021053	674	0.0096439	0.011053	1.62988	1	-6	DG8S277
0.038175	1.41743	95	0.347368	674	0.272997	0.282185	4.38885	1	10	DG8S277
0.63596	0.921088	95	0.268421	674	0.284866	0.282835	0.224065	1	0	DG8S277
0.865799	0.951486	95	0.073684	674	0.0771513	0.076723	0.02856	1	-2	DG8S277
0.094726	0.726956	95	0.189474	674	0.243323	0.238671	2.79217	1	2	DG8S277
0.241235	0.640208	95	0.036842	674	0.0563798	0.053966	1.37337	1	8	DG8S277
0.956609	0.96694	95	0.01579	674	0.0163205	0.016255	0.00296	1	4	DG8S277
0.577818	1.58274	95	0.010526	674	0.0066766	0.007152	0.309775	1	-4	DG8S277
0.057844	2.71467	95	0.031579	674	0.0118694	0.014304	3.59816	1	6	DG8S277
0.161764	0.304808	95	0.005263	674	0.0170623	0.015605	1.95766	1	12	DG8S277
0.25043	1.15E-12	95	4.27E-15	674	0.0037092	0.003251	1.32091	1	14	DG8S277
0.765951	1.05169	83	0.60241	576	0.590278	0.591806	0.088611	1	0	DG8S285
0.684656	0.929874	83	0.307229	576	0.322917	0.320941	0.164932	1	2	DG8S285
0.742479	1.10872	83	0.078313	576	0.0711805	0.072079	0.10796	1	1	DG8S285
0.716093	0.768292	83	0.012048	576	0.015625	0.015175	0.132267	1	-1	DG8S285
0.571041	0.909551	87	0.586207	500	0.609	0.605622	0.320945	1	0	DG8S291
0.066487	0.38118	87	0.017241	500	0.044	0.040034	3.36769	1	-2	DG8S291
0.9626	1.00913	87	0.235632	500	0.234	0.234242	0.002199	1	4	DG8S291
0.081896	1.52991	87	0.149425	500	0.103	0.109881	3.02687	1	2	DG8S291
0.858761	1.15116	87	0.011494	500	0.01	0.010222	0.031667	1	6	DG8S291

FIG. 11D6

0.988027	1.00277	80	0.7125	729	0.711934	0.71199	0.000225	1	2	DG8S292
0.988027	0.997243	80	0.2875	729	0.288066	0.28801	0.000225	1	0	DG8S292
0.831828	1.03936	90	0.255555	727	0.248281	0.249082	0.045096	1	12	DG8S297
0.551964	0.905275	90	0.327778	727	0.350069	0.347613	0.353811	1	0	DG8S297
0.933583	0.980521	90	0.127778	727	0.129986	0.129743	0.006945	1	4	DG8S297
0.290398	1.27318	90	0.15	727	0.121733	0.124847	1.11778	1	16	DG8S297
0.223202	0.347581	90	0.005556	727	0.0158184	0.014688	1.48366	1	8	DG8S297
0.053097	3.64899	90	0.022222	727	0.0061898	0.007956	3.74085	1	-4	DG8S297
0.464751	1.4551	90	0.027778	727	0.0192572	0.020196	0.534428	1	18	DG8S297
0.379013	0.552111	90	0.011111	727	0.019945	0.018972	0.773901	1	6	DG8S297
0.974297	0.984668	90	0.027778	727	0.0281981	0.028152	0.001038	1	10	DG8S297
0.593688	0.820513	90	0.044444	727	0.0536451	0.052632	0.284622	1	14	DG8S297
0.62894	7.55E-10	90	5.20E-13	727	0.0006878	0.000612	0.233501	1	2	DG8S297
0.146628	6.57E-12	90	4.09E-14	727	0.0061898	0.005508	2.10699	1	-2	DG8S297
0.484916	0.874705	98	0.795918	726	0.816804	0.81432	0.487787	1	0	DG8S298
0.503167	1.13979	98	0.193878	726	0.174242	0.176578	0.448251	1	2	DG8S298
0.864815	1.14116	98	0.010204	726	0.0089532	0.009102	0.028984	1	1	DG8S298
0.945889	1.01429	87	0.816092	602	0.813953	0.814224	0.004606	1	0	DG8S301
0.945889	0.985915	87	0.183908	602	0.186047	0.185776	0.004606	1	1	DG8S301
0.575354	1.0993	86	0.366279	666	0.344595	0.347074	0.313806	1	26	DG8S302
0.345297	0.781118	86	0.098837	666	0.123123	0.120346	0.890667	1	24	DG8S302
0.771509	0.950489	86	0.30814	666	0.319069	0.317819	0.084333	1	28	DG8S302
0.629411	1.17834	86	0.063954	666	0.0548048	0.055851	0.23288	1	30	DG8S302
0.882719	1.03304	86	0.162791	666	0.158408	0.15891	0.021763	1	0	DG8S302
0.701115	1.07445	88	0.767045	756	0.753968	0.755332	0.147314	1	2	DG8S303
0.30383	2.47127	88	0.011364	756	0.0046296	0.005332	1.05731	1	4	DG8S303
0.569859	0.897809	88	0.221591	756	0.240741	0.238744	0.322918	1	-2	DG8S303
0.638818	9.80E-13	88	6.48E-16	756	0.0006614	0.000592	0.220291	1	0	DG8S303
0.573528	0.843182	51	0.137255	315	0.15873	0.155738	0.316815	1	0	DG8S307
0.323683	1.27067	51	0.754902	315	0.707936	0.714481	0.974008	1	4	DG8S307
0.425627	0.726679	51	0.068628	315	0.0920635	0.088798	0.634727	1	-4	DG8S307
0.922209	0.948194	51	0.039216	315	0.0412698	0.040984	0.009538	1	8	DG8S307
0.171256	0.801526	90	0.577778	689	0.630624	0.624519	1.87192	1	0	DG8S308
0.265085	1.25437	90	0.2	689	0.166183	0.17009	1.242	1	2	DG8S308
0.369125	1.26411	90	0.111111	689	0.0899855	0.092426	0.806607	1	-14	DG8S308
0.391559	1.31527	90	0.072222	689	0.0558781	0.057766	0.734097	1	-4	DG8S308
0.175154	0.418852	90	0.011111	689	0.0261248	0.02439	1.83827	1	-6	DG8S308
0.340146	0.422097	90	0.005556	689	0.0130624	0.012195	0.909881	1	-2	DG8S308
0.710487	1.23	90	0.022222	689	0.0181422	0.018614	0.137791	1	4	DG8S308
0.859898	0.832488	99	0.005051	660	0.0060606	0.005929	0.031154	1	8	DG8S316
0.808112	0.960815	99	0.308081	660	0.316667	0.315547	0.058982	1	10	DG8S316
0.375005	1.14554	99	0.464646	660	0.431061	0.435441	0.787011	1	0	DG8S316
0.129566	0.664218	99	0.075758	660	0.109848	0.105402	2.2977	1	12	DG8S316
0.867332	1.04077	99	0.116162	660	0.112121	0.112648	0.027905	1	14	DG8S316
0.319464	1.61875	99	0.030303	660	0.0189394	0.020422	0.99114	1	16	DG8S316
0.16135	2.63E-12	99	1.40E-14	660	0.005303	0.004611	1.96153	1	2	DG8S316
0.720932	1.07685	52	0.423077	606	0.405116	0.406535	0.127601	1	2	DG8S322
0.685172	0.788479	52	0.028846	606	0.0363036	0.035714	0.164362	1	10	DG8S322
0.268308	1.25949	52	0.423077	606	0.367987	0.37234	1.22537	1	0	DG8S322
0.012976	0.365904	52	0.048077	606	0.121287	0.115502	6.17244	1	4	DG8S322
0.773078	1.11905	52	0.076923	606	0.0693069	0.069909	0.083146	1	6	DG8S322
0.735723	0.944798	100	0.715	700	0.726429	0.725	0.113921	1	0	DG8S323
0.735723	1.05843	100	0.285	700	0.273571	0.275	0.113921	1	5	DG8S323
0.63791	1.08125	97	0.314433	695	0.297842	0.299874	0.221486	1	0	DG8S324
0.298388	1.58857	97	0.036083	695	0.0230216	0.024621	1.08138	1	10	DG8S324
0.890423	0.974756	97	0.216495	695	0.220863	0.220328	0.01898	1	8	DG8S324
0.316602	0.775253	97	0.092784	695	0.116547	0.113636	1.00293	1	6	DG8S324
0.529445	1.15254	97	0.139175	695	0.123022	0.125	0.395457	1	4	DG8S324
0.466028	0.865511	97	0.175258	695	0.197122	0.194444	0.531379	1	2	DG8S324
0.715962	1.1993	97	0.025773	695	0.0215827	0.022096	0.132395	1	12	DG8S324
0.321194	0.785941	93	0.107527	728	0.13292	0.130037	0.984077	1	-4	DG8S332
0.877088	0.954194	93	0.069893	726	0.0730028	0.07265	0.02392	1	4	DG8S332
0.206955	0.790105	93	0.209678	726	0.251377	0.246642	1.5926	1	2	DG8S332
0.530606	0.889209	93	0.215054	726	0.235537	0.233211	0.393231	1	-2	DG8S332
0.042593	1.41167	93	0.327957	726	0.256887	0.264957	4.1115	1	0	DG8S332
0.217107	1.8282	93	0.032258	726	0.0179063	0.019536	1.52339	1	-6	DG8S332
0.710218	1.16902	93	0.037634	726	0.0323691	0.032967	0.13806	1	6	DG8S332
0.055924	0.696624	87	0.224138	539	0.293135	0.283546	3.65431	1	-5	DG8S333
0.055924	1.43549	87	0.775862	539	0.706865	0.716454	3.65431	1	0	DG8S333
0.131157	0.790449	99	0.358586	764	0.414267	0.407879	2.27876	1	1	SG08S100
0.131157	1.2651	99	0.641414	764	0.585733	0.592121	2.27876	1	2	SG08S100
0.016777	0.677563	97	0.386598	387	0.481912	0.46281	5.71957	1	1	SG08S102
0.016777	1.47588	97	0.613402	387	0.518088	0.53719	5.71957	1	2	SG08S102
0.437006	0.878672	100	0.64	390	0.669231	0.663265	0.604132	1	0	SG08S112
0.437006	1.13808	100	0.36	390	0.330769	0.336735	0.604132	1	2	SG08S112
0.377735	0.874364	99	0.520202	700	0.553571	0.549437	0.778059	1	0	SG08S120
0.377735	1.14369	99	0.479798	700	0.446429	0.450563	0.778059	1	2	SG08S120
0.190291	0.801929	98	0.69898	746	0.743298	0.738152	1.71536	1	0	SG08S138
0.190291	1.24699	98	0.30102	746	0.256702	0.261848	1.71536	1	2	SG08S138
0.144357	0.800952	99	0.510101	713	0.565217	0.558498	2.13089	1	0	SG08S15
0.144357	1.24851	99	0.489899	713	0.434783	0.441502	2.13089	1	2	SG08S15
0.157518	1.23964	99	0.50505	701	0.451498	0.458125	1.9979	1	0	SG08S26

FIG. 11D7

0.157518	0.806684	99	0.494949	701	0.548502	0.541875	1.9979	1	2	SG08S26
0.133952	1.26805	100	0.505	397	0.445844	0.457746	2.2461	1	2	SG08S27
0.133952	0.788614	100	0.495	397	0.554156	0.542254	2.2461	1	1	SG08S27
0.141165	0.787135	97	0.561856	397	0.619647	0.6083	2.16521	1	1	SG08S32
0.141165	1.27043	97	0.438144	397	0.380353	0.3917	2.16521	1	0	SG08S32
0.145676	1.25902	99	0.646465	618	0.592233	0.599721	2.11696	1	1	SG08S35
0.145676	0.794271	99	0.353535	618	0.407767	0.400279	2.11696	1	2	SG08S35
0.212203	0.824463	100	0.45	523	0.498088	0.490369	1.55634	1	1	SG08S39
0.212203	1.21291	100	0.55	523	0.501912	0.509631	1.55634	1	0	SG08S39
0.648445	1.07374	98	0.403061	689	0.386067	0.388183	0.207867	1	0	SG08S42
0.648445	0.931322	98	0.596939	689	0.613933	0.611817	0.207867	1	2	SG08S42
0.305752	1.27727	99	0.126263	610	0.101639	0.105078	1.04894	1	1	SG08S46
0.305752	0.782919	99	0.873737	610	0.898361	0.894922	1.04894	1	3	SG08S46
0.027638	0.711727	96	0.520833	743	0.604307	0.594756	4.8505	1	0	SG08S5
0.027638	1.40503	96	0.479167	743	0.395693	0.405244	4.8505	1	2	SG08S5
0.684951	1.06429	98	0.454082	685	0.438686	0.440613	0.164606	1	2	SG08S50
0.684951	0.939598	98	0.545918	685	0.561314	0.559387	0.164606	1	0	SG08S50
0.006504	0.643485	96	0.4375	381	0.547244	0.525157	7.40506	1	0	SG08S506
0.006504	1.55404	96	0.5625	381	0.452756	0.474843	7.40506	1	2	SG08S506
0.228808	0.816667	99	0.318182	396	0.363636	0.354545	1.44826	1	2	SG08S507
0.228808	1.22449	99	0.681818	396	0.636364	0.645455	1.44826	1	3	SG08S507
0.094402	0.759538	96	0.375	392	0.441327	0.428279	2.79766	1	1	SG08S508
0.094402	1.31659	96	0.625	392	0.558673	0.571721	2.79766	1	3	SG08S508
0.590396	1.11521	96	0.807292	371	0.789757	0.793362	0.289727	1	1	SG08S510
0.590396	0.896691	96	0.192708	371	0.210243	0.206638	0.289727	1	0	SG08S510
0.872061	0.973706	96	0.401042	362	0.407459	0.406114	0.025934	1	1	SG08S511
0.872061	1.027	96	0.598958	362	0.592541	0.593886	0.025934	1	3	SG08S511
0.781	1.04689	95	0.410527	388	0.399485	0.401656	0.077293	1	2	SG08S512
0.781	0.955211	95	0.589474	388	0.600515	0.598344	0.077293	1	1	SG08S512
0.123314	0.781544	100	0.41	392	0.470663	0.458333	2.37472	1	1	SG08S517
0.123314	1.27952	100	0.59	392	0.529337	0.541667	2.37472	1	3	SG08S517
0.091179	1.31381	100	0.625	397	0.559194	0.572435	2.85343	1	1	SG08S520
0.091179	0.761143	100	0.375	397	0.440806	0.427565	2.85343	1	0	SG08S520
0.789675	0.953493	98	0.719388	391	0.7289	0.726994	0.071147	1	2	SG08S6
0.789675	1.04877	98	0.280612	391	0.2711	0.273006	0.071147	1	0	SG08S6
0.128973	0.781948	96	0.442708	380	0.503947	0.491597	2.30483	1	1	SG08S70
0.128973	1.27886	96	0.557292	380	0.496053	0.508403	2.30483	1	3	SG08S70
0.011735	1.47013	99	0.60101	740	0.506081	0.517282	6.35045	1	0	SG08S71
0.011735	0.680212	99	0.39899	740	0.493919	0.482718	6.35045	1	2	SG08S71
0.042417	0.720449	97	0.43299	378	0.51455	0.497895	4.1185	1	3	SG08S73
0.042417	1.38802	97	0.56701	378	0.48545	0.502105	4.1185	1	1	SG08S73
0.085087	0.758593	99	0.409091	394	0.477157	0.463489	2.96496	1	1	SG08S76
0.085087	1.31823	99	0.590909	394	0.522843	0.536511	2.96496	1	2	SG08S76
0.391224	1.1464	99	0.545455	394	0.511421	0.518256	0.735135	1	0	SG08S90
0.391224	0.872294	99	0.454545	394	0.488579	0.481744	0.735135	1	1	SG08S90
0.168061	0.773965	101	0.777228	705	0.81844	0.813275	1.90016	1	1	SG08S93
0.168061	1.29205	101	0.222772	705	0.18156	0.186725	1.90016	1	2	SG08S93
0.159581	0.775408	91	0.28022	362	0.334254	0.3234	1.97819	1	0	SG08S94
0.159581	1.28964	91	0.71978	362	0.665746	0.6766	1.97819	1	2	SG08S94
0.026838	1.40786	99	0.49495	586	0.41041	0.422628	4.91413	1	2	SG08S95
0.026838	0.710299	99	0.505051	586	0.58959	0.577372	4.91413	1	3	SG08S95
0.504013	1.10942	100	0.605	613	0.579935	0.58345	0.446476	1	2	SG08S96
0.504013	0.901372	100	0.395	613	0.420065	0.41655	0.446476	1	3	SG08S96
0.892559	1.0344	100	0.9	713	0.896914	0.897294	0.018243	1	0	SG08S97
0.892559	0.966742	100	0.1	713	0.103086	0.102706	0.018243	1	1	SG08S97

FIG. 11D8

Appendix 3: Output of association with bipolar disorder without panic disorder

P-value	Relative Risk	Number of Affecteds	Frequency in Affecteds	Number of Controls	Frequency in Controls	Frequency under Null Hypothesis	Chi-square Statistic	Information	Allele	Marker
0.383622	0.836763	60	0.616667	811	0.65783	0.654994	0.825344	1	4	AC022239-5
0.305708	1.24469	60	0.283333	811	0.24106	0.243972	1.04913	1	0	AC022239-5
0.977998	1.0095	60	0.083333	811	0.082614	0.082664	0.0007606	1	8	AC022239-5
0.69447	1.35763	60	0.016667	811	0.012331	0.012629	0.154289	1	-4	AC022239-5
0.316991	1.51E-11	60	6.55E-14	811	0.004316	0.004018	1.00132	1	-8	AC022239-5
0.512664	1.39E-10	60	2.58E-13	811	0.00185	0.001722	0.428626	1	-12	AC022239-5
0.111109	1.59559	55	0.154546	574	0.102787	0.107313	2.53838	1	12	AC068974-2
0.723343	1.08063	55	0.3	574	0.283972	0.285374	0.125312	1	14	AC068974-2
0.287331	0.805706	55	0.390909	574	0.44338	0.438792	1.13208	1	0	AC068974-2
0.604326	1.26692	55	0.054545	574	0.043554	0.044515	0.26852	1	16	AC068974-2
0.335492	0.526588	55	0.018182	574	0.033972	0.032591	0.927581	1	6	AC068974-2
0.432112	0.70124	55	0.045455	574	0.063589	0.062003	0.61714	1	10	AC068974-2
0.225515	1.51E-16	55	1.06E-18	574	0.006969	0.006359	1.46893	1	20	AC068974-2
0.121956	4.11E-12	55	4.71E-14	574	0.011324	0.010334	2.39201	1	8	AC068974-2
0.66874	3.17E-10	55	2.76E-13	574	0.000871	0.000795	0.18308	1	15	AC068974-2
0.037867	5.33647	55	0.027273	574	0.005226	0.007154	4.311	1	18	AC068974-2
0.66874	3.17E-10	55	2.76E-13	574	0.000871	0.000795	0.18308	1	2	AC068974-2
0.335342	3.50155	55	0.009091	574	0.002613	0.00318	0.928159	1	-2	AC068974-2
0.66874	3.17E-10	55	2.76E-13	574	0.000871	0.000795	0.18308	1	13	AC068974-2
0.59902	1.14583	58	0.172414	780	0.153846	0.155131	0.276476	1	0	AF131215-1
0.299873	0.805799	58	0.293104	780	0.339744	0.336516	1.07476	1	2	AF131215-1
0.998415	1.00041	58	0.310345	780	0.310256	0.310263	3.94E-06	1	-2	AF131215-1
0.372986	0.552631	58	0.017241	780	0.030769	0.029833	0.793693	1	22	AF131215-1
0.562829	1.45259	58	0.025862	780	0.017949	0.018496	0.334829	1	-4	AF131215-1
0.699929	0.821431	58	0.034483	780	0.041667	0.04117	0.148546	1	8	AF131215-1
0.320657	1.45959	58	0.077586	780	0.054487	0.056086	0.986266	1	4	AF131215-1
0.294411	2.04424	58	0.025862	780	0.012821	0.013723	1.09934	1	-6	AF131215-1
0.723982	1.18777	58	0.043104	780	0.036539	0.036993	0.124709	1	10	AF131215-1
0.704833	4.37E-12	58	2.80E-15	780	0.000641	0.000597	0.143493	1	6	AF131215-1
0.592101	1.18E-14	58	1.52E-17	780	0.001282	0.001193	0.287074	1	12	AF131215-1
0.697802	0.929521	61	0.516394	780	0.534615	0.533294	0.150769	1	0	AF131215-2
0.579915	1.11131	61	0.426229	780	0.400641	0.402497	0.306372	1	4	AF131215-2
0.690189	0.844827	61	0.04918	780	0.057692	0.057075	0.158881	1	8	AF131215-2
0.676324	1.60332	61	0.008197	780	0.005128	0.005351	0.174294	1	-4	AF131215-2
0.501289	1.79E-11	61	3.45E-14	780	0.001923	0.001784	0.452205	1	-8	AF131215-2
0.478237	0.870426	58	0.396552	795	0.430189	0.427902	0.502881	1	0	AF131215-4
0.184845	1.29107	58	0.5	795	0.436478	0.440797	1.75824	1	14	AF131215-4
0.634514	0.838932	58	0.068966	795	0.081132	0.080305	0.225988	1	12	AF131215-4
0.12748	0.285477	58	0.008621	795	0.02956	0.028136	2.32292	1	8	AF131215-4
0.407604	1.7323	58	0.025862	795	0.015094	0.015827	0.68578	1	16	AF131215-4
0.357529	6.82E-12	58	2.58E-14	795	0.003774	0.003517	0.846552	1	18	AF131215-4
0.401027	1.09E-10	58	3.45E-13	795	0.003145	0.002931	0.705246	1	10	AF131215-4
0.70741	1.51E-13	58	9.51E-17	795	0.000629	0.000586	0.140878	1	4	AF131215-4
0.096302	1.76706	57	0.105263	801	0.062422	0.065268	2.76575	1	-6	AF188029-1
0.142988	0.734164	57	0.280702	801	0.347066	0.342657	2.14551	1	0	AF188029-1
0.475623	0.83072	57	0.157895	801	0.184145	0.182401	0.508884	1	-8	AF188029-1
0.832496	1.05185	57	0.210526	801	0.202247	0.202797	0.0447331	1	-4	AF188029-1
0.965978	1.02281	57	0.035088	801	0.034332	0.034382	0.0018193	1	2	AF188029-1
0.434288	0.590808	57	0.017544	801	0.029338	0.028555	0.611329	1	-12	AF188029-1
0.261327	1.43339	57	0.114035	801	0.082397	0.084499	1.26172	1	-2	AF188029-1
0.184115	1.67473	57	0.078947	801	0.048689	0.050699	1.76409	1	-10	AF188029-1
0.710751	3.94E-10	57	2.46E-13	801	0.000624	0.000583	0.137528	1	6	AF188029-1
0.164433	3.63E-11	57	3.20E-13	801	0.008739	0.008159	1.93298	1	4	AF188029-1
0.621405	1.10038	58	0.448276	804	0.424751	0.426334	0.243897	1	0	AF188029-10
0.127551	0.736929	58	0.336207	804	0.407338	0.402552	2.32207	1	2	AF188029-10
0.778226	1.12275	58	0.060345	804	0.054105	0.054524	0.0793164	1	8	AF188029-10
0.099089	1.68676	58	0.12069	804	0.075249	0.078306	2.72014	1	4	AF188029-10
0.901714	0.937651	58	0.034483	804	0.036692	0.036543	0.0152515	1	-2	AF188029-10
0.597494	1.96E-10	58	2.45E-13	804	0.001244	0.00116	0.278792	1	-4	AF188029-10
0.708924	1.64E-10	58	1.02E-13	804	0.000622	0.00058	0.139354	1	6	AF188029-10
0.579137	1.14863	56	0.196429	795	0.175472	0.176851	0.307631	1	0	AF188029-12
0.985476	1.00657	56	0.080357	795	0.079874	0.079906	0.0003314	1	4	AF188029-12
0.593852	0.900594	56	0.535714	795	0.561635	0.559929	0.284369	1	-12	AF188029-12
0.978505	1.0072	56	0.160714	795	0.159748	0.159812	0.0007259	1	-4	AF188029-12
0.543585	2.03734	56	0.008929	795	0.004403	0.0047	0.368935	1	12	AF188029-12
0.938849	0.945455	56	0.017857	795	0.018868	0.018801	0.0058853	1	8	AF188029-12
0.835837	0.961074	60	0.575	809	0.584672	0.584005	0.0429404	1	0	AF188029-7
0.691804	1.07951	60	0.408333	809	0.389988	0.391254	0.15714	1	-4	AF188029-7

FIG. 11E1

0.81474	0.791399	60	0.008333	809	0.010507	0.010357	0.0549035	1	2	AF188029-7
0.142015	3.24E-12	60	3.03E-14	809	0.009271	0.008631	2.15599	1	-2	AF188029-7
0.417341	2.71092	60	0.008333	809	0.00309	0.003452	0.657791	1	4	AF188029-7
0.449054	2.42E-10	60	6.00E-13	809	0.002472	0.002302	0.573038	1	6	AF188029-7
0.417636	1.20832	40	0.525	449	0.477728	0.481595	0.656957	1	0	AF287957-1
0.058137	0.622981	40	0.2875	449	0.393096	0.384458	3.58975	1	-6	AF287957-1
0.033923	3.45491	40	0.0625	449	0.018931	0.022495	4.4986	1	4	AF287957-1
0.239885	0.464266	40	0.025	449	0.052339	0.050102	1.38127	1	-4	AF287957-1
0.149224	2.4349	40	0.05	449	0.021158	0.023517	2.08017	1	2	AF287957-1
0.345145	1.90477	40	0.0375	449	0.020045	0.021472	0.891226	1	-2	AF287957-1
0.767846	0.745149	40	0.0125	449	0.016704	0.01636	0.0871392	1	-14	AF287957-1
0.368674	1.46881	61	0.057377	867	0.039792	0.040948	0.808129	1	-12	D8S1130
0.16812	1.33239	61	0.303279	867	0.246251	0.25	1.89963	1	4	D8S1130
0.091202	0.642196	61	0.131148	867	0.190311	0.186422	2.85304	1	0	D8S1130
0.699451	1.12656	61	0.106557	867	0.095732	0.096444	0.149044	1	8	D8S1130
0.868403	0.963438	61	0.221312	867	0.227797	0.227371	0.0274522	1	-8	D8S1130
0.47914	0.825683	61	0.131148	867	0.154556	0.153017	0.500819	1	-4	D8S1130
0.941492	0.962366	61	0.032787	867	0.034025	0.033944	0.0053868	1	12	D8S1130
0.857508	0.834711	61	0.008197	867	0.009804	0.009698	0.032237	1	16	D8S1130
0.522835	1.35E-11	61	2.34E-14	867	0.00173	0.001616	0.408298	1	2	D8S1130
0.019548	149070	61	0.008196	867	5.54E-08	0.000539	5.4518	1	20	D8S1130
0.825877	0.954251	60	0.266667	839	0.275924	0.275306	0.0483969	1	0	D8S1469
0.704363	1.07443	60	0.483333	839	0.465435	0.46663	0.143973	1	4	D8S1469
0.450413	1.21164	60	0.175	839	0.148987	0.150723	0.569613	1	8	D8S1469
0.270889	2.12565	60	0.025	839	0.011919	0.012792	1.21224	1	12	D8S1469
0.191474	0.538409	60	0.033333	839	0.060191	0.058398	1.70624	1	3	D8S1469
0.211151	0.449292	60	0.016667	839	0.036353	0.035039	1.56352	1	-4	D8S1469
0.599038	3.19E-12	60	3.80E-15	839	0.001192	0.001112	0.276449	1	7	D8S1469
0.864964	1.03499	52	0.480769	845	0.472189	0.472687	0.0289198	1	0	D8S1695
0.355556	0.793651	52	0.192308	845	0.230769	0.22854	0.85353	1	8	D8S1695
0.23416	1.54304	52	0.096154	845	0.064497	0.066332	1.41541	1	6	D8S1695
0.71935	1.15974	52	0.067308	845	0.05858	0.059086	0.129116	1	10	D8S1695
0.749008	0.90158	52	0.105769	845	0.115976	0.115385	0.102369	1	4	D8S1695
0.834287	1.13769	52	0.028846	845	0.025444	0.025641	0.0437674	1	12	D8S1695
0.885143	0.900869	52	0.019231	845	0.021302	0.021182	0.0208667	1	2	D8S1695
0.602845	1.81336	52	0.009615	845	0.005325	0.005574	0.270726	1	14	D8S1695
0.36004	8.49E-11	52	3.53E-13	845	0.004142	0.003902	0.837755	1	16	D8S1695
0.624919	5.76E-12	52	6.83E-15	845	0.001183	0.001115	0.239014	1	-4	D8S1695
0.729607	2.79E-14	52	1.65E-17	845	0.000592	0.000557	0.119473	1	9	D8S1695
0.80841	1.0553	59	0.254237	843	0.244168	0.245014	0.0587953	1	34	D8S1721
0.158461	0.409152	59	0.016949	843	0.040436	0.038462	1.98885	1	36	D8S1721
0.461971	0.864658	59	0.372881	843	0.407465	0.404558	0.541116	1	0	D8S1721
0.595841	1.15963	59	0.144068	843	0.12675	0.128205	0.281315	1	2	D8S1721
0.432878	1.27283	59	0.118644	843	0.095645	0.097578	0.615089	1	4	D8S1721
0.512395	0.541025	59	0.008475	843	0.015552	0.014957	0.429173	1	8	D8S1721
0.077508	2.0411	59	0.076271	843	0.03888	0.042023	3.1164	1	24	D8S1721
0.691622	0.678413	59	0.008475	843	0.012442	0.012108	0.157335	1	32	D8S1721
0.129906	3.04E-15	59	3.10E-17	843	0.010109	0.009259	2.29362	1	38	D8S1721
0.348332	7.27E-11	59	2.84E-13	843	0.003888	0.003561	0.879525	1	26	D8S1721
0.675145	8.24E-11	59	6.41E-14	843	0.000778	0.000712	0.175643	1	6	D8S1721
0.675145	8.24E-11	59	6.41E-14	843	0.000778	0.000712	0.175643	1	-4	D8S1721
0.467735	6.46E-11	59	1.51E-13	843	0.002333	0.002137	0.527321	1	30	D8S1721
0.675145	8.24E-11	59	6.41E-14	843	0.000778	0.000712	0.175643	1	-2	D8S1721
0.06143	0.704028	62	0.532258	866	0.617783	0.612069	3.49835	1	0	D8S1759
0.634574	1.15865	62	0.104839	866	0.091801	0.092672	0.225909	1	2	D8S1759
0.683338	0.750997	62	0.016129	866	0.021383	0.021013	0.166393	1	6	D8S1759
0.225795	1.52383	62	0.08871	866	0.060046	0.061961	1.46715	1	4	D8S1759
0.149653	1.46479	62	0.16129	866	0.116051	0.119073	2.07579	1	12	D8S1759
0.852221	1.07889	62	0.056452	866	0.05254	0.052802	0.0347024	1	10	D8S1759
0.922244	1.07566	62	0.016129	866	0.015012	0.015086	0.0095271	1	14	D8S1759
0.89257	0.871956	62	0.008065	866	0.009238	0.009159	0.0182392	1	16	D8S1759
0.880877	1.11934	62	0.016129	866	0.014434	0.014547	0.0224573	1	8	D8S1759
0.519328	3.81E-10	62	6.62E-13	866	0.001732	0.001616	0.415229	1	-2	D8S1759
0.456297	1.18012	43	0.5	702	0.458689	0.461074	0.554962	1	0	D8S1825
0.24022	0.568227	43	0.046512	702	0.07906	0.077181	1.3793	1	8	D8S1825
0.960318	1.01672	43	0.127907	702	0.126068	0.126174	0.0024755	1	10	D8S1825
0.316577	0.741137	43	0.151163	702	0.193732	0.191275	1.00304	1	6	D8S1825
0.222186	1.48877	43	0.151163	702	0.106838	0.109396	1.49019	1	2	D8S1825
0.361023	2.00E-14	43	1.00E-16	702	0.004986	0.004698	0.834332	1	-2	D8S1825
0.647625	1.42961	43	0.023256	702	0.016382	0.016779	0.208908	1	4	D8S1825
0.440285	7.53E-12	43	2.69E-14	702	0.003561	0.003356	0.595538	1	-1	D8S1825
0.195893	8.13E-12	43	8.19E-14	702	0.009972	0.009396	1.67273	1	12	D8S1825
0.730184	1.47E-10	43	1.05E-13	702	0.000712	0.000671	0.118943	1	14	D8S1825
0.753881	1.07383	44	0.375	841	0.358502	0.359322	0.0982984	1	4	D8S265
0.481601	1.22653	44	0.181818	841	0.153389	0.154802	0.495235	1	0	D8S265
0.078936	9.89E-13	44	1.80E-14	841	0.017836	0.016949	3.08667	1	6	D8S265
0.395095	0.684796	44	0.056818	841	0.080856	0.079661	0.723203	1	-5	D8S265
0.897034	0.96109	44	0.147727	841	0.152794	0.152542	0.0167466	1	2	D8S265
0.317205	0.643406	44	0.056818	841	0.085612	0.084181	1.00044	1	18	D8S265
0.172352	1.82619	44	0.079546	841	0.045184	0.046893	1.86236	1	12	D8S265
0.666891	1.17212	44	0.102273	841	0.088585	0.089266	0.18526	1	14	D8S265
0.749417	4.63E-12	44	2.76E-15	841	0.000595	0.000565	0.102022	1	-3	D8S265

FIG. 11E2

0.186827	1.32E-11	44	1.35E-13	841	0.010107	0.009605	1.74246	1	16	D8S265
0.474836	1.14E-12	44	3.40E-15	841	0.002973	0.002825	0.5107	1	8	D8S265
0.579995	3.94E-11	44	7.04E-14	841	0.001784	0.001695	0.306242	1	10	D8S265
0.749417	4.63E-12	44	2.76E-15	841	0.000595	0.000565	0.102022	1	20	D8S265
0.749417	4.63E-12	44	2.76E-15	841	0.000595	0.000565	0.102022	1	1	D8S265
0.749417	4.63E-12	44	2.76E-15	841	0.000595	0.000565	0.102022	1	-4	D8S265
0.993422	0.996403	33	0.090909	762	0.091207	0.091195	6.80E-05	1	0	D8S351
0.305742	1.35317	33	0.257576	762	0.204068	0.206289	1.04898	1	18	D8S351
0.430602	1.26016	33	0.257576	762	0.215879	0.21761	0.621199	1	2	D8S351
0.918458	0.964886	33	0.151515	762	0.156168	0.155975	0.0104814	1	6	D8S351
0.215344	1.06E-11	33	1.26E-13	762	0.011811	0.011321	1.53513	1	10	D8S351
0.603264	0.768725	33	0.060606	762	0.077428	0.07673	0.270101	1	8	D8S351
0.173787	0.31956	33	0.015152	762	0.045932	0.044654	1.84997	1	20	D8S351
0.400003	0.624339	33	0.045455	762	0.070866	0.069811	0.708316	1	4	D8S351
0.634597	1.22072	33	0.106061	762	0.088583	0.089308	0.225878	1	16	D8S351
0.092623	1.50E-11	33	3.32E-13	762	0.021654	0.020755	2.82819	1	14	D8S351
0.274837	2.84E-12	33	2.63E-14	762	0.009186	0.008805	1.19245	1	12	D8S351
0.33331	3.33405	33	0.015152	762	0.004593	0.005031	0.935995	1	-2	D8S351
0.56006	5.87E-14	33	1.54E-16	762	0.002625	0.002516	0.339601	1	22	D8S351
0.448788	0.854838	58	0.301724	825	0.335758	0.333522	0.573711	1	-6	D8S503
0.321893	1.2189	58	0.37931	825	0.333939	0.33692	0.981241	1	0	D8S503
0.980215	1.00633	58	0.172414	825	0.171515	0.171574	0.000615	1	-2	D8S503
0.035929	0.290408	58	0.017241	825	0.05697	0.05436	4.40048	1	-4	D8S503
0.382595	1.49718	58	0.051724	825	0.035152	0.03624	0.762346	1	2	D8S503
0.350094	1.42442	58	0.077586	825	0.055758	0.057191	0.873115	1	-8	D8S503
0.522981	2.30E-11	58	4.19E-14	825	0.001818	0.001699	0.40801	1	-10	D8S503
0.26815	1.24E-11	58	6.78E-14	825	0.005455	0.005096	1.22619	1	4	D8S503
0.366136	1.20E-13	58	4.38E-16	825	0.003636	0.003398	0.816738	1	-12	D8S503
0.403745	0.855197	62	0.548387	876	0.586758	0.584222	0.697148	1	2	D8S516
0.385815	1.21411	62	0.233871	876	0.200913	0.203092	0.752091	1	4	D8S516
0.871696	0.948964	62	0.08871	876	0.093037	0.092751	0.0260839	1	0	D8S516
0.907354	1.03746	62	0.096774	876	0.093607	0.093817	0.0135436	1	-2	D8S516
0.761509	0.74155	62	0.008065	876	0.010845	0.010661	0.092112	1	-4	D8S516
0.075196	5.94E-18	62	7.90E-20	876	0.013128	0.01226	3.16579	1	6	D8S516
0.003648	14.4546	62	0.024194	876	0.001712	0.003198	8.45133	1	8	D8S516
0.371238	1.19618	57	0.403509	663	0.361237	0.364563	0.799516	1	6	D8S520
0.402548	0.813844	57	0.184211	663	0.217195	0.214583	0.7007	1	8	D8S520
0.027895	4.30E-13	57	9.62E-15	663	0.02187	0.020139	4.83455	1	10	D8S520
0.62836	1.15818	57	0.122807	663	0.107843	0.109028	0.234292	1	0	D8S520
0.577855	0.791186	57	0.052632	663	0.065611	0.064583	0.309715	1	-10	D8S520
0.077741	1.65417	57	0.157895	663	0.10181	0.10625	3.1115	1	4	D8S520
0.222305	1.57E-11	57	1.07E-13	663	0.006787	0.00625	1.48943	1	-12	D8S520
0.353393	0.726123	57	0.078947	663	0.105581	0.103472	0.861236	1	2	D8S520
0.142149	5.08E-11	57	5.03E-13	663	0.009804	0.009028	2.15454	1	-2	D8S520
0.565574	2.82E-12	57	4.26E-15	663	0.001508	0.001389	0.330144	1	12	D8S520
0.684583	2.16E-11	57	1.63E-14	663	0.000754	0.000694	0.165012	1	9	D8S520
0.267119	0.808015	58	0.474138	840	0.527381	0.523942	1.23148	1	0	D8S542
0.893055	0.972736	58	0.318965	840	0.325	0.32461	0.018074	1	2	D8S542
0.084254	1.53528	58	0.206897	840	0.145238	0.14922	2.98086	1	4	D8S542
0.526598	5.83E-11	58	1.04E-13	840	0.001786	0.00167	0.400955	1	-2	D8S542
0.714754	5.94E-12	58	3.54E-15	840	0.000595	0.000557	0.133575	1	-12	D8S542
0.930316	1.03056	55	0.090909	814	0.088452	0.088608	0.0076471	1	-8	D8S550
0.993832	1.00236	55	0.118182	814	0.117936	0.117952	5.98E-05	1	12	D8S550
0.707978	0.920186	55	0.263636	814	0.280098	0.279056	0.140305	1	14	D8S550
0.305257	0.733118	55	0.109091	814	0.14312	0.140967	1.05109	1	-2	D8S550
0.076296	2.41396	55	0.054545	814	0.023342	0.025317	3.14209	1	8	D8S550
0.204892	1.74582	55	0.063636	814	0.037469	0.039125	1.60718	1	18	D8S550
0.77785	0.894133	55	0.063636	814	0.070639	0.070196	0.0795925	1	-6	D8S550
0.384808	0.716726	55	0.063636	814	0.086609	0.085155	0.755287	1	16	D8S550
0.412013	1.36158	55	0.081818	814	0.061425	0.062716	0.672983	1	0	D8S550
0.719432	1.14932	55	0.072727	814	0.063882	0.064442	0.129038	1	10	D8S550
0.277346	3.77E-11	55	2.09E-13	814	0.005528	0.005178	1.18005	1	2	D8S550
0.900611	1.09808	55	0.018182	814	0.016585	0.016686	0.0155975	1	20	D8S550
0.608964	2.02E-13	55	2.48E-16	814	0.001229	0.001151	0.261687	1	6	D8S550
0.469274	1.17E-12	55	2.89E-15	814	0.002457	0.002302	0.523685	1	22	D8S550
0.608964	2.02E-13	55	2.48E-16	814	0.001229	0.001151	0.261687	1	4	D8S550
0.131551	0.579512	16	0.46875	391	0.603581	0.59828	2.2741	1	1	DG00AAHBG
0.131551	1.72559	16	0.53125	391	0.396419	0.40172	2.2741	1	2	DG00AAHBG
0.285177	0.773002	41	0.646341	725	0.702759	0.699739	1.14225	1	2	DG00AAHBH
0.285177	1.29366	41	0.353659	725	0.297241	0.300261	1.14225	1	1	DG00AAHBH
0.382271	0.806631	38	0.631579	811	0.680025	0.677856	0.763387	1	3	DG00AAHBI
0.382271	1.23972	38	0.368421	811	0.319975	0.322144	0.763387	1	1	DG00AAHBI
0.278007	1.3071	52	0.240385	531	0.194915	0.198971	1.17681	1	0	DG8S117
0.278007	0.765052	52	0.759615	531	0.805085	0.801029	1.17681	1	9	DG8S117
0.971671	0.988415	62	0.91129	826	0.912228	0.912162	0.0012612	1	0	DG8S118
0.971671	1.01172	62	0.08871	826	0.087772	0.087838	0.0012612	1	5	DG8S118
0.335458	0.818662	52	0.394231	604	0.442881	0.439024	0.927712	1	0	DG8S127
0.868013	0.956222	52	0.115385	604	0.120033	0.119665	0.01983	1	6	DG8S127
0.258737	1.26033	52	0.490384	604	0.432947	0.4375	1.2755	1	1	DG8S127
0.362993	1.54E-12	52	6.38E-15	604	0.004139	0.003811	0.827511	1	2	DG8S127
0.847624	1.04506	56	0.758929	646	0.750774	0.751425	0.0369218	1	0	DG8S128
0.847624	0.956886	56	0.241071	646	0.249226	0.248575	0.0369218	1	4	DG8S128

FIG. 11E3

0.893296	0.973154	56	0.366072	772	0.372409	0.371981	0.0179922	1	4	DG8S130
0.256885	0.800914	56	0.482143	772	0.537565	0.533816	1.28547	1	0	DG8S130
0.169927	1.8395	56	0.0625	772	0.034974	0.036836	1.88359	1	-16	DG8S130
0.540972	1.83315	56	0.017857	772	0.01101	0.011473	0.373742	1	-4	DG8S130
0.208801	1.73918	56	0.0625	772	0.036917	0.038647	1.57972	1	8	DG8S130
0.358847	7.02E-11	56	2.74E-13	772	0.003886	0.003623	0.841924	1	-12	DG8S130
0.173265	6.94598	56	0.008929	772	0.001295	0.001812	1.85446	1	12	DG8S130
0.516655	1.44E-10	56	2.80E-13	772	0.001943	0.001812	0.420566	1	-8	DG8S130
0.94086	0.980424	60	0.85	739	0.852503	0.852315	0.0055041	1	0	DG8S134
0.877445	0.959107	60	0.141667	739	0.14682	0.146433	0.0237803	1	4	DG8S134
0.109039	12.4118	60	0.008333	739	0.000677	0.001252	2.5681	1	2	DG8S134
1	1	57	0.657895	779	0.657895	0.657895	0	1	0	DG8S136
0.648818	1.1734	57	0.087719	779	0.075738	0.076555	0.207393	1	-6	DG8S136
0.605035	1.24131	57	0.061404	779	0.050064	0.050837	0.267469	1	2	DG8S136
0.359938	1.41477	57	0.078947	779	0.057125	0.058612	0.838111	1	-4	DG8S136
0.113172	0.4357	57	0.026316	779	0.058408	0.05622	2.50935	1	4	DG8S136
0.112226	0.373997	57	0.017544	779	0.045571	0.04366	2.52259	1	6	DG8S136
0.812303	0.868891	57	0.026316	779	0.030167	0.029904	0.0563853	1	-2	DG8S136
0.243919	1.98701	57	0.035088	779	0.017972	0.019139	1.3578	1	8	DG8S136
0.400351	7.17E-13	57	2.31E-15	779	0.003209	0.00299	0.707272	1	-8	DG8S136
0.594973	6.71E-12	57	8.62E-15	779	0.001284	0.001196	0.282645	1	10	DG8S136
0.707013	8.09E-11	57	5.20E-14	779	0.000642	0.000598	0.141279	1	-10	DG8S136
0.253998	4.58704	57	0.008772	779	0.001926	0.002392	1.30118	1	-14	DG8S136
0.604575	0.779604	11	0.272727	234	0.324786	0.322449	0.268151	1	-2	DG8S137
0.33397	1.95338	11	0.136363	234	0.074786	0.077551	0.933443	1	2	DG8S137
0.90172	0.880952	11	0.045455	234	0.051282	0.05102	0.0152496	1	10	DG8S137
0.398795	0.458876	11	0.045455	234	0.094017	0.091837	0.711955	1	4	DG8S137
0.291975	1.90022	11	0.181818	234	0.104701	0.108163	1.11049	1	6	DG8S137
0.960863	0.963635	11	0.090909	234	0.094017	0.093878	0.0024079	1	-4	DG8S137
0.631526	0.768256	11	0.181819	234	0.224359	0.222449	0.229998	1	0	DG8S137
0.409548	2.73812	11	0.045455	234	0.017094	0.018367	0.680111	1	12	DG8S137
0.667845	3.71E-10	11	1.59E-12	234	0.004274	0.004082	0.184133	1	18	DG8S137
0.761687	2.17E-10	11	4.64E-13	234	0.002137	0.002041	0.0919703	1	14	DG8S137
0.543528	7.21E-11	11	6.21E-13	234	0.008547	0.008163	0.36904	1	8	DG8S137
0.366532	0.7517	55	0.1	761	0.128778	0.126838	0.815387	1	-1	DG8S138
0.356408	1.33812	55	0.9	761	0.870565	0.872549	0.850512	1	0	DG8S138
0.708673	1.75E-12	55	1.15E-15	761	0.000657	0.000613	0.139606	1	1	DG8S138
0.887346	1.03081	49	0.408163	585	0.400855	0.40142	0.0200685	1	0	DG8S147
0.900469	0.973571	49	0.591837	585	0.598291	0.597792	0.0156423	1	2	DG8S147
0.688292	4.37E-11	49	3.73E-14	585	0.000855	0.000789	0.16094	1	1	DG8S147
0.636615	0.830118	59	0.059322	694	0.070605	0.069721	0.223196	1	-4	DG8S148
0.545287	1.13556	59	0.305085	694	0.278818	0.280876	0.365829	1	2	DG8S148
0.245471	0.761006	59	0.194915	694	0.241354	0.237716	1.34889	1	-2	DG8S148
0.633681	1.09821	59	0.398305	694	0.376081	0.377822	0.227103	1	0	DG8S148
0.89712	1.07176	59	0.033898	694	0.0317	0.031873	0.0167185	1	4	DG8S148
0.023917	109517	59	0.008474	694	7.80E-08	0.000664	5.10067	1	6	DG8S148
0.567669	1.72E-10	59	2.48E-13	694	0.001441	0.001328	0.326599	1	-17	DG8S148
0.263405	1.34158	31	0.5	473	0.427061	0.431548	1.25077	1	-2	DG8S153
0.857201	0.928867	31	0.112903	473	0.120507	0.12004	0.0323776	1	0	DG8S153
0.165944	1.45E-15	31	2.34E-17	473	0.015856	0.014881	1.91921	1	-6	DG8S153
0.99324	0.994838	31	0.048387	473	0.048626	0.048611	7.18E-05	1	2	DG8S153
0.960209	1.01975	31	0.129032	473	0.12685	0.126984	0.0024892	1	6	DG8S153
0.072949	4.56E-12	31	1.24E-13	473	0.026427	0.024802	3.21539	1	14	DG8S153
0.332639	0.666577	31	0.096774	473	0.138478	0.135913	0.938597	1	8	DG8S153
0.743331	0.823731	31	0.048387	473	0.05814	0.05754	0.10722	1	10	DG8S153
0.410177	1.7307	31	0.048387	473	0.028541	0.029762	0.678286	1	4	DG8S153
0.425003	1.20E-11	31	6.38E-14	473	0.005285	0.00496	0.63644	1	12	DG8S153
0.296624	3.86065	31	0.016129	473	0.004228	0.00496	1.08931	1	-4	DG8S153
0.735263	1.10639	27	0.333334	453	0.311258	0.3125	0.114334	1	4	DG8S155
0.488737	1.35035	27	0.12963	453	0.099338	0.101042	0.479305	1	8	DG8S155
0.975996	0.985593	27	0.092592	453	0.093819	0.09375	0.0009053	1	2	DG8S155
0.304698	0.700246	27	0.185185	453	0.245033	0.241667	1.05352	1	6	DG8S155
0.742857	0.724364	27	0.018519	453	0.025386	0.025	0.107832	1	14	DG8S155
0.823623	1.10598	27	0.111111	453	0.101545	0.102083	0.0496789	1	0	DG8S155
0.684405	0.787116	27	0.055556	453	0.069536	0.06875	0.16521	1	10	DG8S155
0.799212	0.832691	27	0.037037	453	0.04415	0.04375	0.0847029	1	12	DG8S155
0.07759	17.0753	27	0.018518	453	0.001104	0.002083	3.11467	1	-16	DG8S155
0.555291	3.06E-11	27	1.02E-13	453	0.003311	0.003125	0.347924	1	-10	DG8S155
0.73358	5.32E-10	27	5.87E-13	453	0.001104	0.001042	0.11585	1	-2	DG8S155
0.555291	3.06E-11	27	1.02E-13	453	0.003311	0.003125	0.347924	1	16	DG8S155
0.07759	17.0753	27	0.018518	453	0.001104	0.002083	3.11467	1	-12	DG8S155
0.190234	1.29628	56	0.446429	777	0.383526	0.387755	1.7158	1	6	DG8S156
0.161363	0.75991	56	0.5	777	0.568211	0.563625	1.9614	1	0	DG8S156
0.810832	1.13757	56	0.035714	777	0.031532	0.031813	0.0572896	1	-6	DG8S156
0.249986	4.65763	56	0.008929	777	0.001931	0.002401	1.32338	1	3	DG8S156
0.58993	0.599689	56	0.008929	777	0.014801	0.014406	0.290454	1	9	DG8S156
0.271315	0.652005	51	0.911765	556	0.940648	0.938221	1.21009	1	0	DG8S159
0.373416	1.47229	51	0.068627	556	0.047662	0.049423	0.792264	1	-2	DG8S159
0.519798	1.69077	51	0.019608	556	0.011691	0.012356	0.414294	1	2	DG8S159
0.833341	0.959682	58	0.413793	735	0.42381	0.423077	0.0442757	1	0	DG8S161
0.833341	1.04201	58	0.586207	735	0.57619	0.576923	0.0442757	1	2	DG8S161
0.904333	1.02303	60	0.475	815	0.469325	0.469714	0.0144454	1	0	DG8S163

FIG. 11E4

0.904333	0.977488	60	0.525	815	0.530675	0.530286	0.0144454	1	3	DG8S163
0.368949	1.21796	48	0.375	759	0.33004	0.332714	0.807201	1	0	DG8S170
0.473152	0.8554	48	0.614583	759	0.650856	0.648699	0.514605	1	2	DG8S170
0.695445	0.684212	48	0.010417	759	0.015152	0.01487	0.153254	1	-4	DG8S170
0.620301	9.85E-13	48	1.30E-15	759	0.001318	0.001239	0.245444	1	-19	DG8S170
0.620301	9.85E-13	48	1.30E-15	759	0.001318	0.001239	0.245444	1	-8	DG8S170
0.620301	9.85E-13	48	1.30E-15	759	0.001318	0.001239	0.245444	1	-2	DG8S170
0.114214	0.728131	57	0.359649	643	0.435459	0.429286	2.49492	1	14	DG8S177
0.909639	1.1292	57	0.008772	643	0.007776	0.007857	0.0128809	1	20	DG8S177
0.314179	1.2498	57	0.280702	643	0.237947	0.241429	1.01303	1	12	DG8S177
0.567176	0.817801	57	0.078948	643	0.094868	0.093571	0.32743	1	18	DG8S177
0.559832	2.02E-10	57	3.15E-13	643	0.001555	0.001429	0.339996	1	2	DG8S177
0.453995	1.32747	57	0.078947	643	0.060653	0.062143	0.560659	1	0	DG8S177
0.662838	1.13278	57	0.140351	643	0.125972	0.127143	0.190095	1	16	DG8S177
0.387023	1.49758	57	0.052632	643	0.03577	0.037143	0.748274	1	10	DG8S177
0.660657	1.09408	52	0.548077	622	0.525723	0.527448	0.192727	1	0	DG8S179
0.660657	0.914005	52	0.451923	622	0.474277	0.472552	0.192727	1	7	DG8S179
0.28668	0.784423	57	0.22807	625	0.2736	0.269795	1.13515	1	10	DG8S181
0.5118	0.861652	57	0.236842	625	0.2648	0.262463	0.430386	1	12	DG8S181
0.099905	0.561959	57	0.070176	625	0.1184	0.11437	2.70706	1	4	DG8S181
0.585288	1.19538	57	0.105263	625	0.0896	0.090909	0.297763	1	0	DG8S181
0.170825	1.43453	57	0.18421	625	0.136	0.140029	1.87745	1	8	DG8S181
0.139686	2.48889	57	0.035088	625	0.0144	0.016129	2.18142	1	16	DG8S181
0.877448	0.911411	57	0.026316	625	0.0288	0.028592	0.0237791	1	18	DG8S181
0.249849	1.52807	57	0.087719	625	0.0592	0.061584	1.32415	1	14	DG8S181
0.082771	5.56247	57	0.017544	625	0.0032	0.004399	3.00964	1	-2	DG8S181
0.774579	1.3739	57	0.008772	625	0.0064	0.006598	0.0820192	1	2	DG8S181
0.268346	4.65E-12	57	2.62E-14	625	0.0056	0.005132	1.22518	1	6	DG8S181
0.154481	0.604252	44	0.875	818	0.920538	0.918213	2.02743	1	0	DG8S182
0.154481	1.65495	44	0.125	818	0.079462	0.081787	2.02743	1	-3	DG8S182
0.918548	1.02608	47	0.765957	641	0.76131	0.761628	0.0104576	1	0	DG8S188
0.918548	0.974583	47	0.234043	641	0.23869	0.238372	0.0104576	1	-1	DG8S188
0.500557	1.17799	37	0.594595	568	0.554577	0.557025	0.453756	1	0	DG8S192
0.330595	1.3395	37	0.216216	568	0.170775	0.173554	0.946565	1	2	DG8S192
0.058589	2.08E-12	37	5.25E-14	568	0.024648	0.023141	3.57689	1	18	DG8S192
0.59723	0.798803	37	0.081081	568	0.099472	0.098347	0.279193	1	-2	DG8S192
0.678379	0.808381	37	0.054054	568	0.066021	0.065289	0.171958	1	4	DG8S192
0.426469	5.26E-12	37	2.33E-14	568	0.004401	0.004132	0.63242	1	8	DG8S192
0.523483	0.724957	37	0.054054	568	0.073063	0.071901	0.407025	1	12	DG8S192
0.61522	2.80E-12	37	4.94E-15	568	0.001761	0.001653	0.252644	1	-4	DG8S192
0.476998	3.49E-10	37	1.23E-12	568	0.003521	0.003306	0.50572	1	10	DG8S192
0.61522	2.80E-12	37	4.94E-15	568	0.001761	0.001653	0.252644	1	14	DG8S192
0.546339	0.890507	62	0.604839	730	0.632192	0.630051	0.363916	1	0	DG8S197
0.546339	1.12296	62	0.395161	730	0.367808	0.369949	0.363916	1	1	DG8S197
0.238022	1.253	60	0.558333	677	0.502216	0.506784	1.39227	1	0	DG8S201
0.978142	0.994481	60	0.333333	677	0.334564	0.334464	0.0007507	1	4	DG8S201
0.192591	0.666736	60	0.091667	677	0.131462	0.128223	1.69769	1	-2	DG8S201
0.317853	0.516752	60	0.016667	677	0.031758	0.030529	0.99776	1	2	DG8S201
0.73154	1.17216	62	0.959677	735	0.953061	0.953576	0.117702	1	0	DG8S212
0.73154	0.853125	62	0.040323	735	0.046939	0.046424	0.117702	1	2	DG8S212
0.58951	0.870115	35	0.614286	392	0.646684	0.644028	0.291109	1	4	DG8S215
0.560161	1.1622	35	0.385714	392	0.350765	0.35363	0.339425	1	0	DG8S215
0.558385	1.05E-12	35	2.68E-15	392	0.002551	0.002342	0.342508	1	2	DG8S215
0.087153	1.4521	51	0.45098	292	0.361301	0.374636	2.92619	1	0	DG8S221
0.31001	1.26739	51	0.323529	292	0.273973	0.281341	1.03063	1	5	DG8S221
0.027024	0.474096	51	0.088235	292	0.169521	0.157434	4.88927	1	-2	DG8S221
0.278737	0.540566	51	0.029412	292	0.053082	0.049563	1.17324	1	7	DG8S221
0.295148	0.688172	51	0.088235	292	0.123288	0.118076	1.09599	1	4	DG8S221
0.740381	0.712872	51	0.009804	292	0.013699	0.01312	0.109792	1	1	DG8S221
0.570284	1.42E-14	51	2.44E-17	292	0.001712	0.001458	0.322208	1	8	DG8S221
0.423644	2.88119	51	0.009804	292	0.003425	0.004373	0.640186	1	-1	DG8S221
0.288824	1.2375	58	0.37931	726	0.330579	0.334184	1.1251	1	0	DG8S232
0.816519	0.954799	58	0.37069	726	0.381543	0.38074	0.0538355	1	2	DG8S232
0.310151	0.742327	58	0.112069	726	0.145317	0.142857	1.03003	1	-8	DG8S232
0.867702	0.942197	58	0.077586	726	0.081956	0.081633	0.0277481	1	-4	DG8S232
0.207478	0.445616	58	0.017242	726	0.037879	0.036352	1.58894	1	4	DG8S232
0.126512	2.29086	58	0.043103	726	0.019284	0.021046	2.33479	1	-2	DG8S232
0.694959	1.33E-12	58	9.19E-16	726	0.000689	0.000638	0.153769	1	-6	DG8S232
0.432654	3.68E-15	58	1.02E-17	726	0.002755	0.002551	0.615689	1	6	DG8S232
0.089413	1.94577	62	0.951613	672	0.90997	0.913488	2.88491	1	0	DG8S238
0.089413	0.513937	62	0.048387	672	0.09003	0.086512	2.88491	1	-8	DG8S238
0.274709	0.76358	37	0.581081	476	0.644958	0.640351	1.19308	1	4	DG8S242
0.274709	1.30962	37	0.418919	476	0.355042	0.359649	1.19308	1	0	DG8S242
0.045473	2.18298	59	0.949153	468	0.895299	0.901328	4.00101	1	0	DG8S245
0.657445	0.826128	59	0.050848	468	0.060897	0.059772	0.196643	1	-4	DG8S245
0.002114	4.43E-13	59	1.93E-14	468	0.041667	0.037002	9.44796	1	4	DG8S245
0.49051	2.61E-14	59	5.60E-17	468	0.002137	0.001898	0.475408	1	-8	DG8S245
0.53694	0.881381	52	0.538461	682	0.569648	0.567439	0.381241	1	0	DG8S249
0.446947	1.21329	52	0.211539	682	0.181085	0.183243	0.578382	1	-19	DG8S249
0.545259	0.566061	52	0.009615	682	0.016862	0.016349	0.36588	1	-17	DG8S249
0.618479	0.6209	52	0.009615	682	0.015396	0.014986	0.248011	1	-21	DG8S249
0.693429	0.869599	52	0.086538	682	0.098241	0.097411	0.155398	1	-2	DG8S249

FIG. 11E5

0.348212	2.20916	52	0.019231	682	0.008798	0.009537	0.879961	1	6	DG8S249
0.144024	1.84322	52	0.076923	682	0.043255	0.04564	2.13443	1	2	DG8S249
0.064888	3.14E-12	52	5.38E-14	682	0.016862	0.015668	3.40783	1	-6	DG8S249
0.11288	1.22E-11	52	1.54E-13	682	0.012463	0.01158	2.51343	1	4	DG8S249
0.413523	1.51515	52	0.048077	682	0.032258	0.033379	0.668649	1	-4	DG8S249
0.309862	3.95E-12	52	2.04E-14	682	0.005132	0.004768	1.03126	1	-1	DG8S249
0.19623	1.62032	61	0.081967	584	0.052226	0.055039	1.67021	1	-10	DG8S250
0.574063	0.880554	61	0.221311	584	0.244007	0.24186	0.315932	1	-4	DG8S250
0.296023	1.32061	61	0.163934	584	0.129281	0.132558	1.09203	1	2	DG8S250
0.412746	1.2111	61	0.221311	584	0.190068	0.193023	0.670878	1	4	DG8S250
0.689122	1.16071	61	0.073771	584	0.064212	0.065116	0.160038	1	-2	DG8S250
0.045952	0.620924	61	0.172131	584	0.250856	0.243411	3.98337	1	0	DG8S250
0.138411	2.45E-13	61	2.33E-15	584	0.009418	0.008527	2.19554	1	8	DG8S250
0.178086	2.65164	61	0.02459	584	0.009418	0.010853	1.81352	1	-8	DG8S250
0.796756	0.829713	61	0.016394	584	0.019692	0.01938	0.0663309	1	6	DG8S250
0.64033	0.635261	61	0.008197	584	0.012843	0.012403	0.218311	1	-12	DG8S250
0.874558	1.12843	61	0.016393	584	0.014555	0.014729	0.0249236	1	-6	DG8S250
0.372264	3.74E-12	61	1.28E-14	584	0.003425	0.003101	0.796093	1	12	DG8S250
0.725989	1.07153	61	0.647541	680	0.631618	0.632928	0.122826	1	0	DG8S257
0.270525	0.546218	61	0.02459	680	0.044118	0.04251	1.21408	1	-6	DG8S257
0.819751	0.954377	61	0.303279	680	0.313235	0.312416	0.0519225	1	-2	DG8S257
0.558965	1.6024	61	0.016394	680	0.010294	0.010796	0.341499	1	2	DG8S257
0.121356	11.2314	61	0.008197	680	0.000735	0.00135	2.39973	1	-9	DG8S257
0.639807	1.12067	55	0.218182	637	0.199372	0.200867	0.218995	1	15	DG8S258
0.319529	1.22222	55	0.6	637	0.55102	0.554913	0.990872	1	18	DG8S258
0.102499	1.10E-11	55	1.40E-13	637	0.012559	0.011561	2.66622	1	0	DG8S258
0.076313	0.624114	55	0.145455	637	0.214286	0.208815	3.14173	1	12	DG8S258
0.564768	3.16E-15	55	4.98E-18	637	0.00157	0.001445	0.331515	1	24	DG8S258
0.601723	1.40074	55	0.027273	637	0.019623	0.020231	0.272405	1	21	DG8S258
0.564768	3.16E-15	55	4.98E-18	637	0.00157	0.001445	0.331515	1	33	DG8S258
0.024305	143973	55	0.00909	637	6.37E-08	0.000723	5.07274	1	11	DG8S258
0.421668	0.8133	37	0.662162	549	0.706739	0.703925	0.645661	1	2	DG8S261
0.421668	1.22956	37	0.337838	549	0.29326	0.296075	0.645661	1	0	DG8S261
0.685216	0.75139	37	0.027027	561	0.035651	0.035117	0.164313	1	-4	DG8S262
0.790829	0.93827	37	0.513513	561	0.529412	0.528428	0.0703492	1	0	DG8S262
0.832714	1.09169	37	0.094595	561	0.087344	0.087793	0.0446145	1	-10	DG8S262
0.646493	1.13866	37	0.243243	561	0.220143	0.221572	0.21035	1	2	DG8S262
0.65731	0.732383	37	0.027027	561	0.036542	0.035953	0.196808	1	-2	DG8S262
0.835834	1.10586	37	0.067568	561	0.061497	0.061873	0.0429424	1	4	DG8S262
0.509432	1.70371	37	0.027027	561	0.016043	0.016722	0.435233	1	6	DG8S262
0.234749	2.33E-11	37	2.30E-13	561	0.009804	0.009197	1.41185	1	-14	DG8S262
0.474342	5.07E-11	37	1.81E-13	561	0.003565	0.003344	0.511843	1	8	DG8S262
0.320699	1.25582	60	0.233333	751	0.195073	0.197904	0.986093	1	15	DG8S265
0.855426	0.965833	60	0.55	751	0.558589	0.557953	0.0331966	1	18	DG8S265
0.08648	6.77E-12	60	8.67E-14	751	0.01265	0.011714	2.9387	1	0	DG8S265
0.48687	0.845934	60	0.183333	751	0.20972	0.207768	0.483436	1	12	DG8S265
0.600177	1.40076	60	0.025	751	0.017976	0.018496	0.274729	1	21	DG8S265
0.579128	3.48E-12	60	4.64E-15	751	0.001332	0.001233	0.307647	1	33	DG8S265
0.612115	1.79472	60	0.008333	751	0.00466	0.004932	0.257106	1	-6	DG8S285
0.758941	0.938379	51	0.441177	615	0.456911	0.455706	0.0941703	1	-2	DG8S266
0.375468	1.20102	51	0.480392	615	0.434959	0.438438	0.785488	1	0	DG8S266
0.330063	0.701968	51	0.078431	615	0.10813	0.105856	0.948651	1	-4	DG8S266
0.862197	0.966728	60	0.383333	741	0.391363	0.390762	0.0301294	1	-4	DG8S269
0.509776	0.881533	60	0.55	741	0.580972	0.578652	0.434526	1	0	DG8S269
0.035716	2.51045	60	0.066667	741	0.027665	0.030587	4.41061	1	-5	DG8S269
0.173805	0.672634	33	0.227273	567	0.304233	0.3	1.84982	1	-2	DG8S271
0.217974	1.38912	33	0.681818	567	0.606702	0.610833	1.51766	1	0	DG8S271
0.430147	0.674487	33	0.060606	567	0.087302	0.085833	0.622426	1	2	DG8S271
0.011843	17.6876	33	0.030303	567	0.001764	0.003333	6.3342	1	4	DG8S271
0.912134	0.89298	58	0.008621	674	0.009644	0.009563	0.0121764	1	-6	DG8S277
0.94707	1.01449	58	0.275862	674	0.272997	0.273224	0.0044071	1	10	DG8S277
0.056017	1.47874	58	0.37069	674	0.284866	0.291667	3.65156	1	0	DG8S277
0.730844	1.12844	58	0.086207	674	0.077151	0.077869	0.118521	1	-2	DG8S277
0.075152	0.647866	58	0.172414	674	0.243323	0.237705	3.16875	1	2	DG8S277
0.289543	0.597743	58	0.034483	674	0.05638	0.054645	1.12175	1	8	DG8S277
0.940706	1.05742	58	0.017241	674	0.016321	0.016393	0.0055327	1	4	DG8S277
0.22211	1.36E-13	58	9.13E-16	674	0.006677	0.006148	1.49069	1	-4	DG8S277
0.254078	2.21016	58	0.025862	674	0.011869	0.012978	1.30074	1	6	DG8S277
0.45351	0.500945	58	0.008621	674	0.017062	0.016393	0.561863	1	12	DG8S277
0.363148	4.45E-11	58	1.66E-13	674	0.003709	0.003415	0.826977	1	14	DG8S277
0.504084	1.15686	48	0.625	576	0.590278	0.592949	0.446328	1	0	DG8S285
0.395359	0.820477	48	0.28125	576	0.322917	0.319712	0.722397	1	2	DG8S285
0.664895	1.18625	48	0.083333	576	0.071181	0.072115	0.187632	1	1	DG8S285
0.6726	0.663154	48	0.010417	576	0.015625	0.015224	0.178576	1	-1	DG8S285
0.356563	0.835858	61	0.565574	500	0.609	0.604278	0.849961	1	0	DG8S291
0.104377	0.36212	61	0.016393	500	0.044	0.040998	2.63735	1	-2	DG8S291
0.91169	0.975087	61	0.229508	500	0.234	0.233512	0.0123005	1	4	DG8S291
0.016273	1.91592	61	0.180328	500	0.103	0.111408	5.77312	1	2	DG8S291
0.844816	0.818186	61	0.008197	500	0.01	0.009804	0.038313	1	6	DG8S291
0.83931	0.953758	47	0.702128	729	0.711934	0.71134	0.0411182	1	2	DG8S292
0.83931	1.04849	47	0.297872	729	0.288066	0.28866	0.0411182	1	0	DG8S292
0.403875	0.81926	54	0.212963	727	0.248281	0.245839	0.696758	1	12	DG8S297

FIG. 11E6

0.167267	1.32613	54	0.416667	727	0.350069	0.354673	1.90727	1	0	DG8S297
0.564603	0.836642	54	0.111111	727	0.129986	0.128681	0.331796	1	4	DG8S297
0.43227	1.25473	54	0.148148	727	0.121733	0.12356	0.616716	1	16	DG8S297
0.06839	1.50E-11	54	2.41E-13	727	0.015818	0.014725	3.32125	1	8	DG8S297
0.049136	4.5873	54	0.027778	727	0.00619	0.007682	3.87069	1	-4	DG8S297
0.561417	1.4551	54	0.027778	727	0.019257	0.019846	0.337257	1	18	DG8S297
0.389089	0.459234	54	0.009259	727	0.019945	0.019206	0.741788	1	6	DG8S297
0.530464	0.650253	54	0.018519	727	0.028198	0.027529	0.393502	1	10	DG8S297
0.203843	0.504031	54	0.027778	727	0.053645	0.051857	1.61463	1	14	DG8S297
0.704978	2.41E-11	54	1.66E-14	727	0.000688	0.00064	0.143345	1	2	DG8S297
0.255396	2.69E-11	54	1.68E-13	727	0.00619	0.005762	1.29354	1	-2	DG8S297
0.501664	0.852277	60	0.791667	726	0.816804	0.814885	0.451414	1	0	DG8S298
0.48337	1.18478	60	0.2	726	0.174242	0.176209	0.49125	1	2	DG8S298
0.94407	0.930186	60	0.008333	726	0.008953	0.008906	0.0049217	1	1	DG8S298
0.446864	1.21504	60	0.841667	602	0.813953	0.816465	0.578595	1	0	DG8S301
0.446864	0.82302	60	0.158333	602	0.186047	0.183535	0.578595	1	1	DG8S301
0.756783	0.938942	59	0.330508	666	0.344595	0.343448	0.0959195	1	26	DG8S302
0.676336	0.881765	59	0.110169	666	0.123123	0.122069	0.17428	1	24	DG8S302
0.798986	1.05355	59	0.330509	666	0.319069	0.32	0.0648514	1	28	DG8S302
0.354682	1.42403	59	0.076271	666	0.054805	0.056552	0.856634	1	30	DG8S302
0.866434	0.956303	59	0.152542	666	0.158408	0.157931	0.0282879	1	0	DG8S302
0.716308	1.09245	50	0.77	756	0.753968	0.754963	0.132057	1	2	DG8S303
0.511442	2.1717	50	0.01	756	0.00463	0.004963	0.431115	1	4	DG8S303
0.634817	0.889546	50	0.22	756	0.240741	0.239454	0.225585	1	-2	DG8S303
0.720383	2.14E-12	50	1.42E-15	756	0.000661	0.00062	0.128126	1	0	DG8S303
0.403115	1.35581	27	0.203704	315	0.15873	0.162281	0.699016	1	0	DG8S307
0.527856	0.825112	27	0.666667	315	0.707936	0.704678	0.398517	1	4	DG8S307
0.649847	0.788966	27	0.074074	315	0.092064	0.090643	0.206094	1	-4	DG8S307
0.631224	1.36652	27	0.055556	315	0.04127	0.042398	0.230404	1	8	DG8S307
0.230715	0.785129	55	0.572727	689	0.630624	0.626344	1.43645	1	0	DG8S308
0.859933	1.0476	55	0.172727	689	0.166183	0.166667	0.0311381	1	2	DG8S308
0.342117	1.35534	55	0.118182	689	0.089986	0.09207	0.902483	1	-14	DG8S308
0.158839	1.68961	55	0.090909	689	0.055878	0.058468	1.98525	1	-4	DG8S308
0.20954	0.341997	55	0.009091	689	0.026125	0.024866	1.5746	1	-6	DG8S308
0.09531	1.16E-15	55	1.53E-17	689	0.013062	0.012097	2.78232	1	-2	DG8S308
0.229603	2.04227	55	0.036364	689	0.018142	0.019489	1.44332	1	4	DG8S308
0.233849	2.20E-12	61	1.34E-14	660	0.006061	0.005548	1.41851	1	8	DG8S316
0.90597	0.97619	61	0.311475	660	0.316667	0.316227	0.0139532	1	10	DG8S316
0.917848	0.980467	61	0.42623	660	0.431061	0.430652	0.0106387	1	0	DG8S316
0.492863	0.803044	61	0.090164	660	0.109848	0.108183	0.47027	1	12	DG8S316
0.378811	1.28211	61	0.139344	660	0.112121	0.114424	0.774558	1	14	DG8S316
0.334599	1.75593	61	0.032787	660	0.018939	0.020111	0.931016	1	16	DG8S316
0.265328	3.41E-11	61	1.82E-13	660	0.005303	0.004854	1.24074	1	2	DG8S316
0.427873	0.807637	31	0.354839	606	0.405116	0.402669	0.628589	1	2	DG8S322
0.637181	1.34977	31	0.048387	606	0.036304	0.036892	0.222449	1	10	DG8S322
0.188944	1.4144	31	0.451613	606	0.367987	0.372057	1.72584	1	0	DG8S322
0.145344	0.499649	31	0.064516	606	0.121287	0.118524	2.12045	1	4	DG8S322
0.738106	1.17794	31	0.080645	606	0.069307	0.069859	0.111799	1	6	DG8S322
0.858146	1.0385	62	0.733871	700	0.726429	0.727034	0.0319461	1	0	DG8S323
0.858146	0.96293	62	0.266129	700	0.273571	0.272966	0.0319461	1	5	DG8S323
0.737494	0.93203	60	0.283333	695	0.297842	0.296689	0.112342	1	0	DG8S324
0.891325	1.08814	60	0.025	695	0.023022	0.023179	0.018667	1	10	DG8S324
0.451315	0.836462	60	0.191667	695	0.220863	0.218543	0.567348	1	8	DG8S324
0.784209	1.08289	60	0.125	695	0.116547	0.117219	0.0749874	1	6	DG8S324
0.949648	1.01838	60	0.125	695	0.123022	0.123179	0.0039878	1	4	DG8S324
0.610258	1.12657	60	0.216667	695	0.197122	0.198675	0.259799	1	2	DG8S324
0.433781	1.56322	60	0.033333	695	0.021583	0.022517	0.612678	1	12	DG8S324
0.424208	0.782798	56	0.107143	726	0.13292	0.131074	0.638627	1	-4	DG8S332
0.776646	1.10954	56	0.080357	726	0.073003	0.073529	0.0804817	1	4	DG8S332
0.374309	0.812204	56	0.214286	726	0.251377	0.248721	0.789309	1	2	DG8S332
0.605396	0.885167	56	0.214286	726	0.235537	0.234015	0.266934	1	-2	DG8S332
0.285306	1.26095	56	0.303571	726	0.256887	0.26023	1.14164	1	0	DG8S332
0.231896	2.03133	56	0.035714	726	0.017906	0.019182	1.4292	1	-6	DG8S332
0.504794	1.3969	56	0.044643	726	0.032369	0.033248	0.444843	1	6	DG8S332
0.542218	0.868101	51	0.264706	539	0.293135	0.290678	0.371444	1	-5	DG8S333
0.542218	1.15194	51	0.735294	539	0.706865	0.709322	0.371444	1	0	DG8S333
0.178207	0.769592	61	0.352459	764	0.414287	0.409697	1.81251	1	1	SG08S100
0.178207	1.29939	61	0.647541	764	0.585733	0.590303	1.81251	1	2	SG08S100
0.084572	0.706471	58	0.396551	387	0.481912	0.470787	2.97477	1	1	SG08S102
0.084572	1.41548	58	0.603448	387	0.518088	0.529213	2.97477	1	2	SG08S102
0.637875	0.908047	61	0.647541	390	0.669231	0.666297	0.221532	1	0	SG08S112
0.637875	1.10127	61	0.352459	390	0.330769	0.333703	0.221532	1	2	SG08S112
0.527988	1.12903	60	0.583333	700	0.553571	0.555921	0.398263	1	0	SG08S120
0.527988	0.885714	60	0.416667	700	0.446429	0.444079	0.398263	1	2	SG08S120
0.405963	0.838721	60	0.708333	746	0.743298	0.740695	0.690592	1	0	SG08S138
0.405963	1.19229	60	0.291667	746	0.256702	0.259305	0.690592	1	2	SG08S138
0.866941	0.968661	61	0.557377	713	0.565217	0.564599	0.0280712	1	0	SG08S15
0.866941	1.03235	61	0.442623	713	0.434783	0.435401	0.0280712	1	2	SG08S15
0.168402	1.29721	61	0.516394	701	0.451498	0.456693	1.89711	1	0	SG08S26
0.168402	0.770884	61	0.483607	701	0.548502	0.543307	1.89711	1	2	SG08S26
0.145968	1.3272	61	0.516393	397	0.445844	0.45524	2.11388	1	2	SG08S27
0.145968	0.753463	61	0.483607	397	0.554156	0.54476	2.11388	1	1	SG08S27

FIG. 11E7

0.223599	0.782321	58	0.560345	397	0.619647	0.612088	1.48112	1	1	SG08S32
0.223599	1.27825	58	0.439655	397	0.380353	0.387912	1.48112	1	0	SG08S32
0.308774	1.22057	61	0.639344	618	0.592233	0.596465	1.03591	1	1	SG08S35
0.308774	0.819292	61	0.360656	618	0.407767	0.403535	1.03591	1	2	SG08S35
0.518451	0.883656	61	0.467213	523	0.498088	0.494863	0.416973	1	1	SG08S39
0.518451	1.13166	61	0.532787	523	0.501912	0.505137	0.416973	1	0	SG08S39
0.533866	1.12929	59	0.415254	689	0.386067	0.388369	0.387027	1	0	SG08S42
0.533866	0.885511	59	0.584746	689	0.613933	0.611631	0.387027	1	2	SG08S42
0.654111	1.14576	61	0.114754	610	0.101639	0.102832	0.200756	1	1	SG08S46
0.654111	0.872787	61	0.885246	610	0.898361	0.897168	0.200756	1	3	SG08S46
0.189	0.776046	59	0.542373	743	0.604307	0.599751	1.72539	1	0	SG08S5
0.189	1.28858	59	0.457627	743	0.395693	0.400249	1.72539	1	2	SG08S5
0.565554	1.11705	59	0.466102	685	0.438686	0.44086	0.330178	1	2	SG08S50
0.565554	0.895211	59	0.533898	685	0.561314	0.55914	0.330178	1	0	SG08S50
0.069287	0.693897	57	0.456141	381	0.547244	0.535388	3.29983	1	0	SG08S506
0.069287	1.44114	57	0.54386	381	0.452756	0.464612	3.29983	1	2	SG08S506
0.16987	0.75	60	0.3	396	0.363636	0.355263	1.88409	1	2	SG08S507
0.16987	1.33333	60	0.7	396	0.636364	0.644737	1.88409	1	3	SG08S507
0.276852	0.802329	58	0.387931	392	0.441326	0.434444	1.18248	1	1	SG08S508
0.276852	1.24637	58	0.612069	392	0.558674	0.565556	1.18248	1	3	SG08S508
0.463684	1.20429	58	0.818965	371	0.789757	0.793706	0.536987	1	1	SG08S510
0.463684	0.830365	58	0.181035	371	0.210243	0.206294	0.536987	1	0	SG08S510
0.897524	1.02652	58	0.413793	362	0.407459	0.408333	0.0165867	1	1	SG08S511
0.897524	0.974165	58	0.586207	362	0.592541	0.591667	0.0165867	1	3	SG08S511
0.538636	1.1332	57	0.429825	388	0.399484	0.403371	0.378074	1	2	SG08S512
0.538636	0.882455	57	0.570175	388	0.600516	0.596629	0.378074	1	1	SG08S512
0.276978	0.807854	61	0.418032	392	0.470663	0.463576	1.18186	1	1	SG08S517
0.276978	1.23785	61	0.581967	392	0.529337	0.536424	1.18186	1	3	SG08S517
0.246826	1.25791	61	0.614754	397	0.559194	0.566594	1.34118	1	1	SG08S520
0.246826	0.794971	61	0.385246	397	0.440806	0.433406	1.34118	1	0	SG08S520
0.998424	0.999561	59	0.728813	391	0.7289	0.728889	3.90E-06	1	2	SG08S6
0.998424	1.00044	59	0.271187	391	0.2711	0.271111	3.90E-06	1	0	SG08S6
0.200406	0.775536	59	0.440678	380	0.503947	0.495444	1.63941	1	1	SG08S70
0.200406	1.28943	59	0.559322	380	0.496053	0.504556	1.63941	1	3	SG08S70
0.073231	1.40539	61	0.590164	740	0.506081	0.512484	3.20907	1	0	SG08S71
0.073231	0.711544	61	0.409836	740	0.493919	0.487516	3.20907	1	2	SG08S71
0.252356	0.7983	60	0.458333	378	0.51455	0.506849	1.31021	1	3	SG08S73
0.252356	1.25266	60	0.541667	378	0.48545	0.493151	1.31021	1	1	SG08S73
0.830216	0.958777	60	0.466667	394	0.477157	0.475771	0.0459779	1	1	SG08S76
0.830216	1.043	60	0.533333	394	0.522843	0.524229	0.0459779	1	2	SG08S76
0.781553	1.0559	60	0.525	394	0.511421	0.513216	0.0768933	1	0	SG08S90
0.781553	0.947063	60	0.475	394	0.488579	0.486784	0.0768933	1	1	SG08S90
0.234935	0.760584	62	0.774194	705	0.81844	0.814863	1.41073	1	1	SG08S93
0.234935	1.31478	62	0.225806	705	0.18156	0.185137	1.41073	1	2	SG08S93
0.402568	0.83199	56	0.294643	362	0.334254	0.328947	0.700643	1	0	SG08S94
0.402568	1.20194	56	0.705357	362	0.665746	0.671053	0.700643	1	2	SG08S94
0.124832	1.34391	60	0.483333	586	0.41041	0.417183	2.35562	1	2	SG08S95
0.124832	0.744099	60	0.516667	586	0.58959	0.582817	2.35562	1	3	SG08S95
0.965393	1.00838	61	0.581967	613	0.579935	0.580119	0.0018825	1	2	SG08S96
0.965393	0.991686	61	0.418033	613	0.420065	0.419881	0.0018825	1	3	SG08S96
0.500983	0.81986	61	0.877049	713	0.896914	0.895349	0.452853	1	0	SG08S97
0.500983	1.21972	61	0.122951	713	0.103086	0.104651	0.452853	1	1	SG08S97

FIG. 11E8

FIG. 12A

Table 2a. Allelic frequencies for markers strongly correlated to the orientation.

Marker	Allele	Frequency on inverted form	Frequency on common form
AF131215-2	0	0.067	0.839
AF131215-2	4	0.896	0.121
AF131215-2	8	0.037	0.040
D8S1695	0	0.083	0.749
D8S1695	2	0.000	0.025
D8S1695	4	0.092	0.151
D8S1695	6	0.129	0.012
D8S1695	8	0.596	0.036
D8S1695	10	0.081	0.013
D8S1695	12	0.020	0.014
DG00AAHBG	1	0.253	0.837
DG00AAHBG	2	0.747	0.163
DG8S127	0	0.055	0.741
DG8S127	1	0.935	0.098
DG8S127	6	0.010	0.161
DG8S156	-6	0.051	0.000
DG8S156	0	0.181	0.806
DG8S156	6	0.744	0.194
DG8S156	9	0.025	0.000
DG8S161	0	0.074	0.688
DG8S161	2	0.926	0.312
DG8S163	0	0.947	0.154
DG8S163	3	0.053	0.846
DG8S170	-4	0.038	0.000
DG8S170	0	0.651	0.135
DG8S170	2	0.310	0.865
DG8S179	0	0.082	0.795
DG8S179	7	0.918	0.205
DG8S197	0	0.149	0.902
DG8S197	1	0.851	0.098
DG8S242	0	0.751	0.121
DG8S242	4	0.249	0.879
DG8S257	-9	0.000	0.006
DG8S257	-6	0.116	0.031
DG8S257	-2	0.628	0.054
DG8S257	0	0.256	0.884
DG8S257	2	0.000	0.025
DG8S261	0	0.726	0.075
DG8S261	2	0.274	0.925
DG8S269	-5	0.030	0.003
DG8S269	-4	0.891	0.102

FIG. 12B

Table 2a. Allelic frequencies for markers strongly correlated to the orientation.

Marker	Allele	Frequency on inverted form	Frequency on common form
DG8S269	0	0.079	0.894
SG08S102	1	0.076	0.765
SG08S102	2	0.924	0.235
SG08S120	0	0.159	0.858
SG08S120	2	0.841	0.142
SG08S138	0	0.391	0.939
SG08S138	2	0.609	0.061
SG08S15	0	0.158	0.805
SG08S15	2	0.842	0.195
SG08S26	0	0.841	0.167
SG08S26	2	0.159	0.833
SG08S27	1	0.136	0.831
SG08S27	2	0.864	0.169
SG08S32	0	0.771	0.108
SG08S32	1	0.229	0.892
SG08S5	0	0.087	0.902
SG08S5	2	0.913	0.098
SG08S508	1	0.081	0.680
SG08S508	3	0.919	0.320
SG08S517	1	0.075	0.767
SG08S517	3	0.925	0.233
SG08S520	0	0.080	0.683
SG08S520	1	0.920	0.317
SG08S70	1	0.074	0.766
SG08S70	3	0.926	0.234
SG08S71	0	0.928	0.226
SG08S71	2	0.072	0.774
SG08S73	1	0.924	0.236
SG08S73	3	0.076	0.764
SG08S76	1	0.030	0.716
SG08S76	2	0.970	0.284
SG08S95	2	0.905	0.093
SG08S95	3	0.095	0.907

Date: Sept. 19, 2003 Express Mail Label No. EV214945978US

Inventors: Sóley Björnsdóttir, Augustine Kong and Thorgeir E. Thorgeirsson

Attorney's Docket No.: 2345.2058-000

INVERSION ON CHROMOSOME 8p23 IS RISK FACTOR FOR ANXIETY DISORDERS, DEPRESSION AND BIPOLAR DISORDERS

BACKGROUND OF THE INVENTION

In general terms, panic disorder is a manifestation of anxiety in which feelings of extreme fear and dread strike unexpectedly and repeatedly for no apparent reason, accompanied by intense physical symptoms. Panic disorder is characterized by unexpected and repeated episodes of intense fear accompanied by physical symptoms that can include chest pain, heart palpitations, shortness of breath, dizziness or abdominal distress. About 1.7% of the adult U.S. population ages 18 to 54 - approximately 2.4 million Americans - has panic disorder in a given year. Panic disorder affects about 1 out of 75 people worldwide. Women are twice as likely as men to develop panic disorder. Panic disorder typically strikes in young adulthood. Roughly half of all people who have panic disorder develop the condition before age 24.

Many people with panic disorder develop intense anxiety between episodes. It is not unusual for a person with panic disorder to develop phobias about places or situations where panic attacks have occurred, such as in supermarkets or other everyday situations. As the frequency of panic attacks increases, the person often begins to avoid

situations where they fear another attack may occur or where help would not be immediately available. This avoidance can develop into agoraphobia, an inability to go beyond known and safe surroundings because of intense fear and anxiety.

Panic disorder can coexist with other comorbid disorders, *e.g.*, depression, bipolar disorder (also known as manic-depressive illness; a brain disorder that causes unusual shifts in a person's mood, energy, and ability to function), obsessive-compulsive disorder (characterized by intrusive, unwanted, repetitive thoughts and rituals performed out of a feeling of urgent need), histrionic personality disorder, family denial and dysfunction, hypercholesterolemia and substance abuse. About 30% of people with panic disorder abuse alcohol and 17% abuse drugs, such as cocaine and marijuana, in unsuccessful attempts to alleviate the anguish and distress caused by their condition. Appropriate diagnosis and treatment of other disorders such as, for example, depression, bipolar disorder and substance abuse, are important to successfully treat panic disorder.

Heredity, other biological factors, stressful life events, and thinking in a way that exaggerates relatively normal bodily reactions are all believed to play a role in the onset of panic disorder. The exact cause or causes of panic disorder are unknown and are the subject of intense scientific investigation.

Studies in animals and humans have focused on pinpointing the specific brain areas and circuits involved in anxiety and fear, which underlie anxiety disorders such as panic disorder. Fear, an emotion that evolved to deal with danger, causes an automatic, rapid protective response that occurs without the need for conscious thought. It has been found that the body's fear response is coordinated by a small structure deep inside the brain, called the amygdala. The amygdala, although relatively small, is a very complicated structure, and recent research suggests that anxiety disorders are associated with abnormal activity in the amygdala.

Treatment for panic disorder can consist of taking a medication to adjust the chemicals in the body, or treatment might involve working with a psychotherapist to gain more control over your anxieties. Both types of treatment can be very effective.

For many patients, the combination of medication and psychotherapy appears to be more effective than either treatment alone. Early treatment can help keep panic disorder from progressing. Therefore, early diagnosis of panic disorder is essential for providing effective treatment.

The symptoms associated with panic disorder (*e.g.*, chest pain, heart palpitations, shortness of breath, dizziness or abdominal distress) often mimic symptoms of a heart attack or other life-threatening medical conditions. As a result, the diagnosis of panic disorder is frequently not made until extensive and costly medical procedures fail to provide a correct diagnosis or relief.

SUMMARY OF THE INVENTION

A number of genetic disorders, both Mendelian and complex, are associated with genomic rearrangements. Such arrangements can cause the disorder directly, or it simply may be linked to the disorder without being a causative contributor.

Described herein is the association of a known inversion region on chromosome 8p with panic disorder (PD), and the identification of markers useful in detecting a particular allelic variant of the inversion fragment, including, for example, highly correlated genetic markers, microsatellite repeats, single nucleotide polymorphisms (SNPs) and small insertion/deletions (INDELs). These correlated markers, both individually and in combination, reliably serve as a diagnostic surrogate to FISH in detecting the chromosome 8p inversion status of an individual. Thus, the chromosome 8p inversion, and any of its correlated genetic markers or marker haplotypes, serve as a diagnostic test for these two complex disorders. Additionally, other inversion related markers or marker haplotypes associated with the identified markers and marker haplotypes can also be used as a diagnostic test for panic disorder and bipolar disease.

These inversion-related markers and marker haplotypes can also be used to discover new associations of the inversion to other disorders, or as a diagnostic for other disorders that are subsequently shown to be associated with this chromosome 8p inversion, *e.g.*, comorbid disorders.

In one embodiment, the invention is directed to a method of diagnosing an anxiety disorder in an individual comprising detecting one or more genetic markers in the Inv8p23 genomic region. In a particular embodiment, the anxiety disorder is PD. In a particular embodiment, the anxiety disorder is a comorbid PD disorder. In a particular embodiment, the comorbid disorder is selected from the group consisting of: depression, bipolar disorder, obsessive-compulsive disorder, histrionic personality disorder, family denial and dysfunction, hypercholesterolemia and substance abuse. In a particular embodiment, the comorbid disorder is selected from the group consisting of: depression, bipolar disorder and hypercholesterolemia. In another embodiment, the anxiety disorder is bipolar disorder. In a particular embodiment, the genetic marker is the inverted allele of Inv8p23. In one embodiment, the inversion fragment is detected by detecting one or more genetic markers. In another embodiment, the orientation of the inversion fragment is detected by detecting a haplotype comprising one or more genetic markers. Individual markers or haplotypes can comprise markers selected from the group consisting of: SG08S5, SG08S95, DG8S269, DG8S163, DG8S197, AF131215-2, DG8S127, SG08S120, DG8S179, SG08S27, DG8S261, SG08S71, SG08S32, SG08S517, SG08S70, SG08S102, SG08S73, SG08S76, SG08S26, DG8S242, SG08S15, DG8S257, SG08S138, DG8S161, SG08S520, DG00AAHBG, SG08S508, DG8S156, D8S1695 and DG8S170. In a particular embodiment, the haplotype comprises the A allele for SG08S71 and the G allele for DG00AAHBG.

In another embodiment, the invention is directed to a kit for diagnosing an anxiety disorder comprising at least one agent useful for detecting one or more genetic markers in the Inv8p23 genomic region, wherein the marker is associated with the anxiety disorder. In a particular embodiment, the anxiety disorder is PD. In another embodiment, the anxiety disorder is a comorbid PD disorder. In yet another embodiment, the comorbid disorder is selected from the group consisting of: depression, bipolar disorder, obsessive-compulsive disorder, histrionic personality disorder, family denial and dysfunction, hypercholesterolemia and substance abuse. In a particular embodiment, the comorbid disorder is selected from the group consisting

of: depression, bipolar disorder and hypercholesterolemia. In another embodiment, the anxiety disorder is bipolar disorder. In a particular embodiment, the genetic marker is the inverted allele of Inv8p23. One or more genetic markers can be selected from the group consisting of: SG08S5, SG08S95, DG8S269, DG8S163, DG8S197, AF131215-2, DG8S127, SG08S120, DG8S179, SG08S27, DG8S261, SG08S71, SG08S32, SG08S517, SG08S70, SG08S102, SG08S73, SG08S76, SG08S26, DG8S242, SG08S15, DG8S257, SG08S138, DG8S161, SG08S520, DG00AAHBG, SG08S508, DG8S156, D8S1695 and DG8S170. In a particular embodiment bipolar disorder is comorbid with PD, and one or more markers is selected from the group consisting of the markers listed in FIGS. 6A-6K. In another embodiment, bipolar disorder occurs without PD, and one or more markers are selected from the group consisting of the markers listed in FIGS. 7A-7K.

In another embodiment, the invention is directed to a method of diagnosing panic disorder or a comorbid disorder in an individual comprising detecting a marker in the Inv8p23 genomic region. In a particular embodiment, the marker is selected from the group consisting of: SG08S71, DG8S197, SG08S73, DG8S332, AF131215-4, SG08S5, SG08S520, SG08S95, SG08S508, SG08S102, DG00AAHBG, SG08S70, DG8S161, DG8S298, SG08S506, SG08S15, DG8S249, DG8S148, DG8S269, DG8S127, SG08S93, D8S1695, SG08S517, AF131215-2, AF131215-1, DG8S242, DG8S136, D8S516, DG8S148, SG08S39, D8S1130, DG8S127, DG8S232, DG8S137, DG8S269, D8S550, SG08S507, SG08S507, DG8S245, DG8S197, D8S1825, SG08S27, SG08S27, DG8S257, D8S503, DG8S297, DG8S297, SG08S120, SG08S120, D8S351, DG8S159, D8S1695, D8S1759, SG08S26, SG08S26, D8S1130, DG8S221, D8S1130, D8S1759, DG8S307, DG8S153, DG8S277, DG8S192, D8S1695, DG8S265, DG8S257, DG8S127, DG8S163, DG8S163, DG8S156, DG8S261, DG8S179, SG08S138, SG08S32, SG08S76 and DG8S170.

In another embodiment, the invention is directed to a method of diagnosing bipolar disorder associated with panic disorder in an individual comprising detecting a

marker in the Inv8p23 genomic region. In a particular embodiment, the marker is selected from the group consisting of the markers listed in FIGS. 6A-6K.

In another embodiment, the invention is directed to a method of diagnosing bipolar disorder without associated panic disorder in an individual comprising detecting a marker in the Inv8p23 genomic region. In a particular embodiment, the marker is selected from the group consisting of the markers listed in FIGS. 7A-7K.

In another embodiment, the invention is directed to a method for determining the orientation of the Inv8p23 inversion fragment comprising detecting one or more surrogate markers. In a particular embodiment, one or more surrogate markers are selected from the group consisting of: SG08S5, SG08S95, DG8S269, DG8S163, DG8S197, AF131215-2, DG8S127, SG08S120, DG8S179, SG08S27, DG8S261, SG08S71, SG08S32, SG08S517, SG08S70, SG08S102, SG08S73, SG08S76, SG08S26, DG8S242, SG08S15, DG8S257, SG08S138, DG8S161, SG08S520, DG00AAHBG, SG08S508, DG8S156, D8S1695 and DG8S170.

BRIEF DESCRIPTION OF THE DRAWINGS

The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawings will be provided by the Office upon request and payment of the necessary fee.

FIGS. 1A through 1C show the region of Inv8p23 with positions according to NCBI Build 33 of the human genome. FIG. 1A depicts the assembly, or the inverted variant, and FIG. 1B depicts the alternate assembly, which in fact is the common form of the polymorphism. FIG. 1C depicts the positions of sequenced BACs (bacterial artificial chromosomes) against the sequence of Build 33, and deCode's genetic marker map.

FIGS. 2A and 2B show the results of FISH measurements for an individual heterozygous for the inversion polymorphism (FIG. 2A), and a map of the region on which the locations of the probes used to determine orientations is indicated (FIG. 2B).

FIG. 3 is a table showing the results of the determination of the orientation of chromosomes for both individuals with panic disorder and controls.

FIG. 4 is a table showing the results of the linkage disequilibrium analysis, and lists all markers that serve as surrogates for determining the orientation without using FISH measurements. Markers are provided as described in Example 4, and allele numbers are as follows: For SNPs each nucleotide (A, C, G, T) has a numeric code such that: A=0, C=1, G=2, T=3; for microsatellites and INDELs, the allele number is reported as the offset from the smaller of the two alleles of CEPH sample 1347-02 (CEPH genomic repository); thus allele 0 serves as a (CEPH) reference allele.

FIGS. 5A through 5D show a table that lists allelic association to panic disorder with marker names and alleles indicated. Markers are provided as described in Example 4, and allele numbers are as follows: For SNPs each nucleotide (A, C, G, T) has a numeric code such that: A=0, C=1, G=2, T=3; for microsatellites and INDELs, the allele number is reported as the offset from the smaller of the two alleles of CEPH sample 1347-02 (CEPH genomic repository); thus allele 0 serves as a (CEPH) reference allele.

FIGS. 6A through 6K show a table that lists allelic associations to bipolar disorder, with marker names and alleles indicated. Markers are provided as described in Example 4, and allele numbers are as follows: For SNPs each nucleotide (A, C, G, T) has a numeric code such that: A=0, C=1, G=2, T=3; for microsatellites and INDELs, the allele number is reported as the offset from the smaller of the two alleles of CEPH sample 1347-02 (CEPH genomic repository); thus allele 0 serves as a (CEPH) reference allele.

FIGS. 7A through 7K show a table that lists allelic associations to bipolar disorder in the absence of panic disorder, with marker names and alleles indicated. Markers are provided as described in Example 4, and allele numbers are as follows: For SNPs each nucleotide (A, C, G, T) has a numeric code such that: A=0, C=1, G=2, T=3; for microsatellites and INDELs, the allele number is reported as the offset from the

smaller of the two alleles of CEPH sample 1347-02 (CEPH genomic repository); thus allele 0 serves as a (CEPH) reference allele.

FIGS. 8A through 8C show a table that lists all markers named in the application along with the position as it is in the most recent build of the human genome (NCBI Build 33).

FIGS. 9A1-9A3, 9B1-9B3 and 9C1-9C4 are tables that lists known genes in the inverted region.

FIG. 10 is a graph showing gene names and relative position according to NCBI Build 33.

FIGS. 11A1-11A3, 11B1-11B12, 11C1-11C8, 11D1-11D8 and 11E1-11E8 are tables listing raw data used for FIGS. 4-7, for the orientation, panic disorder, bipolar disorder, and bipolar disorder without panic disorder.. FIGS. 11A1-11A3 show the correlation of 120 markers to the orientation of the Inv8p23 inversion fragment. FIGS. 11B1-11B12 show the allelic frequencies (joint with orientation) of 120 markers on the inverted and common alleles of the Inv8p23 inversion fragment. FIGS. 11C1-11C8 show the association of 120 markers to panic disorder. FIGS. 11D1-11D8 show the association of 120 markers to bipolar disorder. FIGS. 11E1-11E8 show the association of 120 markers to bipolar disorder without panic disorder.

FIGS. 12A and 12B show a table that lists allele frequencies for markers srongly correlated to the orientation (*e.g.*, the markers of FIGS. 5A-5D).

DETAILED DESCRIPTION OF THE INVENTION

The invention builds on analysis of phenotype data, genotype data, and results from Fluorescence In-situ Hybridization (FISH) experiments. The analysis shows that carriers of the inverted form of an inversion polymorphism involving an unusual 3-5 MB region on the p-arm of chromosome 8, have an increased risk of developing psychiatric disorders. Reported herein is the discovery of the association between the less frequent form of the inversion polymorphism on chromosome 8p23 (Inv8p23) and Panic Disorder (PD). Chromosomes were initially studied by FISH, and subsequently

identified surrogates for the inversion were identified by analyzing allelic association of microsatellite markers and single nucleotide polymorphisms (SNPs) in the region in a group of individuals with known status for Inv8p23, alleviating the need for further FISH. As used herein, the "region" or "genomic region" of Inv8p23 is the 3-5 MB region on the p-arm of chromosome 8 described above. The "Inv8p23 inversion fragment" is that sequence that is found in different orientations in a population.

The region of Inv8p23 exhibits extensive linkage disequilibrium (recombination is supressed in heterozygotes, but not in homozygotes of either orientation for PD). Analysis of FISH data found the less frequent form of Inv8p23 in strong association with PD with a risk ratio of near 1.5 for carriers of one copy compared to non-carriers. These results were confirmed in a larger sample using the surrogate markers (used herein to refer to markers that can be used to determine the orientation of the Inv8p23 inversion fragment). Elevated risk ratios were also detected for bipolar disorder (BPD) and depression severe enough to require medication. The observation brings psychiatric disorders into the realm of genomic disorders, and opens the possibility that other complex phenotypes are similiarily influenced by the orientation of DNA segments. The location and structure of Inv8p23 is shown in FIGS. 1A-C.

Genetic markers are particular "alleles" at "polymorphic sites". Genetic markers can include "polymorphisms", which are particular alleles at polymorphic sites. A nucleotide position at which more than one sequence is possible in a population (either a natural population or a synthetic population, *e.g.*, a library of synthetic molecules) is referred to herein as a "polymorphic site". Where a polymorphic site is a single nucleotide in length, the site is referred to as a single nucleotide polymorphism ("SNP"). For example, if at a particular chromosomal location, one member of a population has an adenine and another member of the population has a thymine at the same position, then this position is a polymorphic site, and, more specifically, the polymorphic site is a SNP. Polymorphic sites can allow for differences in sequences based on substitutions, insertions or deletions. Each version of the sequence with respect to the polymorphic site is referred to herein as an "allele" of the polymorphic

site. Thus, in the previous example, the SNP allows for both an adenine allele and a thymine allele. "Markers" are genetic elements, *e.g.*, SNPs, genes, polymorphisms, drug resistance, restriction sites, *etc.*, or combinations of genetic elements, *e.g.*, haplotypes, that can be used to indicate a particular characteristic. For example, if a particular SNP is demonstrated to be "associated" (see below) to a particular phenotype, then the detection of the particular SNP is indicative of the particular phenotype. In this example, the SNP is used as a marker.

Populations of individuals exhibiting genetic diversity do not have identical genomes; in other words, there are many polymorphic sites in a population. In some cases, reference is made to different alleles at a polymorphic site without choosing a reference allele. Alternatively, a reference sequence is can be referred to for a particular polymorphic site. The reference allele is sometimes referred to as the "wild-type" allele and it usually is chosen as either the first sequenced allele or as the allele from a 'non-affected" individual (*e.g.*, an individual that does not display a disease or abnormal phenotype). Alleles that differ from the reference are referred to as "variant" alleles.

An individual at risk for or to be diagnosed with PD or a comorbid disorder is an individual who has the inverted allele (Inv8p23) of the inversion polymorphism on chromosome 8, described above. This allele can be identified directly by methods known in the art, or by identification and orientation of any of the markers identified herein. Additionally, the markers described herein can themselves serve as predictors of susceptibility to or as an indicator of PD or a comorbid disorder. As used herein, a "comorbid disorder" refers to a disorder existing simultaneously with and usually independently of another medical condition, *e.g.*, PD. Examples of disorders comorbid with PD include, but are not limited to, depression, bipolar disorder (BPD; also known as manic-depressive illness), obsessive-compulsive disorder (OCD), histrionic personality disorder, family denial and dysfunction, hypercholesterolemia and substance abuse.

Inv8p23 is herein demonstrated to be associated with PD and comorbid disorders, and the Inv8p23 genomic region contains several genes (FIGS. 9A1-9A3,

9B1-9B3 and 9C1-9C4). The term "gene," as used herein, refers to not only the sequence of nucleic acids encoding a polypeptide, but also the promoter regions, transcription enhancement elements, splice donor/acceptor sites, splice enhancer and silencer sequences and other regulators of splicing, and other non-transcribed nucleic acid elements. The likely result of the inversion polymorphism is the misexpression, *e.g.*, no expression, increased expression, or reduced expression, of one or more of the genes affected by the inversion. Therefore, these genes will serve as potential targets for treating PD and comorbid disorders.

Additional variants can include changes that affect a polypeptide, *e.g.*, the polypeptides that result from expression of one or more genes affected by Inv8p23. These sequence differences, when compared to a reference nucleotide sequence, can include the insertion or deletion of a single nucleotide, or of more than one nucleotide, resulting in a frame shift; the change of at least one nucleotide, resulting in a change in the encoded amino acid; the change of at least one nucleotide, resulting in the generation of a premature stop codon; the deletion of several nucleotides, resulting in a deletion of one or more amino acids encoded by the nucleotides; the insertion of one or several nucleotides, such as by unequal recombination or gene conversion, resulting in an interruption of the coding sequence of a reading frame; duplication of all or a part of a sequence; transposition; or a rearrangement of a nucleotide sequence, as described in detail above. Such sequence changes alter the polypeptide encoded by a nucleic acid in the Inv8p23 region. For example, if the change in the nucleic acid sequence causes a frame shift, the frame shift can result in a change in the encoded amino acids, and/or can result in the generation of a premature stop codon, causing generation of a truncated polypeptide. Alternatively, a polymorphism associated with PD and/or one or more comorbid disorders or a susceptibility to PD and/or one or more comorbid disorders can be a synonymous change in one or more nucleotides (*i.e.*, a change that does not result in a change in the amino acid sequence). Such a polymorphism can, for example, alter splice sites, affect the stability or transport of mRNA, or otherwise affect the transcription or translation of the polypeptide. The polypeptide encoded by the

reference nucleotide sequence is the "reference" polypeptide with a particular reference amino acid sequence, and polypeptides encoded by variant alleles are referred to as "variant" polypeptides with variant amino acid sequences.

In certain methods described herein, an individual can be diagnosed with or identified as being susceptible to PD or a comorbid disorder is an individual who has the Inv8p23 allele. As identified herein, this is the "at-risk" genotype, and it can also be used to diagnose individuals affected by PD or a comorbid disorder. As used herein, "genotype" refers to an accounting of one or more genetic elements (*e.g.*, an allele at a particular polymorphic site) of a particular individual. The significance associated with an at-risk genotype can be measured by an odds ratio. In a further embodiment, the significance is measured by a percentage. In one embodiment, significance is demonstrated with an odds ratio of at least about 1.0, including but not limited to: 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8 and 1.9 (or higher for some alleles in FIG. 9). In one embodiment, an odds ratio of at least 1.0 is significant. In another embodiment, an odds ratio of at least about 1.5 is significant. In another embodiment, a significant increase in risk is at least about 1.7 is significant. In another embodiment, a significant increase in risk is at least about 20%, including but not limited to about 25%, 30%, 35%, 40%, 45%, 50%, 55%, 60%, 65%, 70%, 75%, 80%, 85%, 90%, 95% and 98%. In one embodiment, a significant increase in risk is at least about 50%. It is understood that identifying whether a risk is medically significant can also depend on a variety of factors, including the specific disease, the haplotype, and often, environmental factors.

An at-risk genotype is one where the genotype is more frequently present in an individual at risk for PD or a comorbid disorder, compared to the frequency of its presence in a healthy individual (control), and wherein the presence of the haplotype is indicative of PD and/or one or more comorbid disorders or susceptibility to PD and/or one or more comorbid disorders. A protective genotype is one where the genotype is more frequently present in an individual where the genotype is protective against being affected by PD or a comorbid disorder compared to the frequency of its presence in an individual with PD or a comorbid disorder. The presence of the genotype is indicative

of a protection from PD and/or one or more comorbid disorders or protection from susceptibility to PD and/or one or more comorbid disorders as described above.

Standard techniques for genotyping for the presence of SNPs and/or microsatellite markers can be used, such as fluorescent-based techniques (Chen, *et al.*, *Genome Res.* 9, 492 (1999)), PCR, LCR, Nested PCR and other techniques for nucleic acid amplification. In one embodiment, the method comprises assessing in an individual the presence or frequency of SNPs and/or microsatellites in determining the presence or absence of the Inv8p23 allele.

NUCLEIC ACID THERAPEUTIC AGENTS

The invention includes nucleic acid molecules useful in detecting the presence or absence of the Inv8p23 allele. For example, probes, primers or labeled nucleic acids can be used to detect either the inversion allele itself, or to detect markers that are indicative of the presence or absence of the allele. In another embodiment, a nucleic acid of the invention; a nucleic acid complementary to a nucleic acid of the invention; or a portion of such a nucleic acid (*e.g.*, an oligonucleotide as described below); or a nucleic acid encoding one or more polypeptides or nucleic acids that result from the expression of one or more genes contained in the Inv8p23 region, can be used in "antisense" therapy, in which a nucleic acid (*e.g.*, an oligonucleotide) which specifically hybridizes to the mRNA and/or genomic DNA of a nucleic acid is administered or generated *in situ*, RNAi therapy, in which double-stranded RNA corresponding to a particular gene inactivates expression of the gene, or any other therapeutic regimen involving precise nucleic acid sequences contained in the Inv8p23 region. A sequence "complementary" to a portion of an RNA, as referred to herein, indicates that a sequence has sufficient complementarity to be able to hybridize with the RNA, forming a stable duplex; in the case of double-stranded antisense nucleic acids, a single strand of the duplex DNA can thus be tested, or triplex formation can be assayed. The ability to hybridize will depend on both the degree of complementarity and the length of the antisense nucleic acid, as described in detail above. Generally, the longer the

hybridizing nucleic acid, the more base mismatches it can contain and still form a stable duplex (or triplex, as the case may be). One skilled in the art can ascertain a tolerable degree of mismatch by use of standard procedures.

In another embodiment of the invention, small double-stranded interfering RNA (RNA interference (RNAi)) can be used. RNAi is a post-transcription process, in which double-stranded RNA is introduced, and sequence-specific gene silencing results. See, *e.g.*, Elbashir, S. *et al.*, 2001, *Nature*, 411:494-498; Lee, N., 2002, *Nat. Biotechnol.*, 19:500-505; the entire teachings of these references are incorporated herein by reference.

Endogenous expression of a gene product can also be reduced by inactivating or "knocking out" the gene or its promoter using targeted homologous recombination (*e.g.*, see Smithies, O. *et al.*, 1985, *Nature*, 317:230-234; Thomas, K. and Capecchi, M., 1987, *Cell*, 51:503-512; Thompson, S. *et al.*, 1989, *Cell*, 5:313-321). For example, an altered, non-functional gene (or a completely unrelated DNA sequence) flanked by DNA homologous to the endogenous gene (either the coding regions or regulatory regions of the gene) can be used, with or without a selectable marker and/or a negative selectable marker, to transfect cells that express the gene *in vivo*. Insertion of the DNA construct, via targeted homologous recombination, results in inactivation of the gene. The recombinant DNA constructs can be directly administered or targeted to the required site *in vivo* using appropriate vectors, as described above. Alternatively, expression of non-altered genes can be increased using a similar method: targeted homologous recombination can be used to insert a DNA construct comprising a non-altered functional gene, or the complement thereof, or a portion thereof, in place of an gene in the cell, as described above. In another embodiment, targeted homologous recombination can be used to insert a DNA construct comprising a nucleic acid that encodes a polypeptide variant that differs from that present in the cell.

Alternatively, endogenous expression of a gene product can be reduced by targeting deoxyribonucleotide sequences complementary to the regulatory region (*i.e.*, the promoter and/or enhancers) to form triple helical structures that prevent

transcription of the gene in target cells in the body (see generally, Helene, C., 1991, *Anticancer Drug Des.*, 6:569-84; Helene, C. *et al.*, 1992, *Ann. N.Y. Acad. Sci.*, 660:27-36; and Maher, L., 1992, *Bioassays*, 14:807-15). Likewise, the antisense constructs described herein, by antagonizing the normal biological activity of the gene product, can be used in the manipulation of tissue, *e.g.*, tissue differentiation, both *in vivo* and for *ex vivo* tissue cultures. Furthermore, the anti-sense techniques (*e.g.*, microinjection of antisense molecules, or transfection with plasmids whose transcripts are anti-sense with regard to a nucleic acid RNA or nucleic acid sequence) can be used to investigate the role of one or more genes located in the Inv8p23 region in the development of disease-related conditions. Such techniques can be utilized in cell culture, but can also be used in the creation of transgenic animals and the use of such animals as disease models.

The therapeutic agents as described herein can be delivered in a composition, as described above, or alone. They can be administered systemically, or can be targeted to a particular tissue. The therapeutic agents can be produced by a variety of means, including chemical synthesis; recombinant production; *in vivo* production (*e.g.*, a transgenic animal, such as U.S. Patent No. 4,873,316 to Meade *et al.*), for example, and can be isolated using standard means such as those described herein. In addition, a combination of any of the above methods of treatment (*e.g.*, administration of non-altered polypeptide in conjunction with antisense therapy targeting altered mRNA; administration of a first splicing variant in conjunction with antisense therapy targeting a second splicing variant) can also be used.

The invention additionally pertains to use of such therapeutic agents, as described herein, for the manufacture of a medicament for the treatment of PD or a comorbid disorder, *e.g.*, using the methods described herein.

The current invention also pertains to methods of monitoring the effectiveness of treatment based on the regulation of expression (*e.g.*, relative or absolute expression) of one or more genes in the Inv8p23 region. Messenger RNA or protein or enzymatic activity can be measured in a sample, *e.g.*, tissue, blood, *e.g.*, peripheral blood or cells,

derived from an individual. An assessment of the levels of expression or activity can be made before and during treatment with therapeutic agents.

Nucleic acids of the invention can be fused to a marker sequence, for example, a sequence that encodes a polypeptide to assist in isolation or purification of the polypeptide. Such sequences include, but are not limited to, those that encode a glutathione-S-transferase (GST) fusion protein and those that encode a hemagglutinin A (HA) polypeptide marker from influenza.

An "isolated" nucleic acid molecule, as used herein, is one that is separated from nucleic acids that normally flank the gene or nucleotide sequence (as in genomic sequences) and/or has been completely or partially purified from other transcribed sequences (*e.g.*, as in an RNA library). For example, an isolated nucleic acid of the invention is substantially isolated with respect to the complex cellular milieu in which it naturally occurs, or culture medium when produced by recombinant techniques, or chemical precursors or other chemicals when chemically synthesized. In some instances, the isolated material will form part of a composition (for example, a crude extract containing other substances), buffer system or reagent mix. In other circumstances, the material can be purified to essential homogeneity, for example as determined by PAGE or column chromatography such as HPLC. Preferably, an isolated nucleic acid molecule comprises at least about 50, 80 or 90% (on a molar basis) of all macromolecular species present. With regard to genomic DNA, the term "isolated" also can refer to nucleic acid molecules that are separated from the chromosome with which the genomic DNA is naturally associated. For example, the isolated nucleic acid molecule can contain less than about 5 kb, 4 kb, 3 kb, 2 kb, 1 kb, 0.5 kb or 0.1 kb of nucleotides that flank the nucleic acid molecule in the genomic DNA of the cell from which the nucleic acid molecule is derived.

The nucleic acid molecule can be fused to other coding or regulatory sequences and still be considered isolated. Thus, recombinant DNA contained in a vector is included in the definition of "isolated" as used herein. Also, isolated nucleic acid molecules include recombinant DNA molecules in heterologous host cells, as well as

partially or substantially purified DNA molecules in solution. "Isolated" nucleic acid molecules also encompass *in vivo* and *in vitro* RNA transcripts of the DNA molecules of the present invention. An isolated nucleic acid molecule or nucleotide sequence can include a nucleic acid molecule or nucleotide sequence that is synthesized chemically or by recombinant means. Therefore, recombinant DNA contained in a vector is included in the definition of "isolated" as used herein. Also, isolated nucleotide sequences include recombinant DNA molecules in heterologous organisms, as well as partially or substantially purified DNA molecules in solution. *In vivo* and *in vitro* RNA transcripts of the DNA molecules of the present invention are also encompassed by "isolated" nucleotide sequences. Such isolated nucleotide sequences are useful in the manufacture of the encoded polypeptide, as probes for isolating homologous sequences (*e.g.*, from other mammalian species), for gene mapping (*e.g.*, by *in situ* hybridization with chromosomes), or for detecting expression of the gene in tissue (*e.g.*, human tissue), such as by Northern blot analysis.

The present invention also pertains to variant nucleic acid molecules that are not necessarily found in nature but encode a polypeptide that results from the expression of one or more genes in the Inv8p23 region, a splicing variant of such a polypeptide or polymorphic variant thereof. Thus, for example, DNA molecules that comprise a sequence that is different from the naturally-occurring nucleotide sequence but, due to the degeneracy of the genetic code, encode a polypeptide expressed by a gene in the Inv8p23 region also the subject of this invention. The invention also encompasses nucleotide sequences encoding portions (fragments), or encoding variant polypeptides. Such variants can be naturally-occurring, such as in the case of allelic variation or single nucleotide polymorphisms, or non-naturally-occurring, such as those induced by various mutagens and mutagenic processes. Variations include, but are not limited to, addition, deletion and substitution of one or more nucleotides that can result in conservative or non-conservative amino acid changes, including additions and deletions.

Other alterations of the nucleic acid molecules of the invention can include, for example, labeling, methylation, internucleotide modifications such as uncharged linkages (*e.g.*, methyl phosphonates, phosphotriesters, phosphoamidates, carbamates), charged linkages (*e.g.*, phosphorothioates, phosphorodithioates), pendent moieties (*e.g.*, polypeptides), intercalators (*e.g.*, acridine, psoralen), chelators, alkylators, and modified linkages (*e.g.*, alpha anomeric nucleic acids). Also included are synthetic molecules that mimic nucleic acid molecules in the ability to bind to a designated sequence via hydrogen bonding and other chemical interactions. Such molecules include, for example, those in which peptide linkages substitute for phosphate linkages in the backbone of the molecule.

The invention also pertains to nucleic acid molecules that hybridize under high stringency hybridization conditions, such as for selective hybridization, to a nucleotide sequence described herein (*e.g.*, nucleic acid molecules that specifically hybridize to a nucleotide sequence encoding polypeptides described herein, and, optionally, have an activity of the polypeptide).

Such nucleic acid molecules can be detected and/or isolated by specific hybridization (*e.g.*, under high stringency conditions). "Specific hybridization," as used herein, refers to the ability of a first nucleic acid to hybridize to a second nucleic acid in a manner such that the first nucleic acid does not hybridize to any nucleic acid other than to the second nucleic acid (*e.g.*, when the first nucleic acid has a higher similarity to the second nucleic acid than to any other nucleic acid in a sample wherein the hybridization is to be performed). "Stringency conditions" for hybridization refers to the incubation and wash conditions, *e.g.*, conditions of temperature and buffer concentration, that permit hybridization of a particular nucleic acid to a second nucleic acid; the first nucleic acid can be perfectly (*i.e.*, 100%) complementary to the second, or the first and second can share some degree of complementarity that is less than perfect (*e.g.*, 70%, 75%, 85%, 95%). For example, certain high stringency conditions can be used to distinguish perfectly complementary nucleic acids from those of less complementarity. "High stringency conditions", "moderate stringency conditions" and

"low stringency conditions" for nucleic acid hybridizations are explained on pages 2.10.1-2.10.16 and pages 6.3.1-6.3.6 in *Current Protocols in Molecular Biology* (Ausubel, F.M. *et al.*, "*Current Protocols in Molecular Biology*", John Wiley & Sons, (1998), the entire teachings of which are incorporated by reference herein). The exact conditions that determine the stringency of hybridization depend not only on ionic strength (*e.g.*, 0.2XSSC, 0.1XSSC), temperature (*e.g.*, room temperature, 42°C, 68°C) and the concentration of destabilizing agents such as formamide or denaturing agents such as SDS, but also on factors such as the length of the nucleic acid sequence, base composition, percent mismatch between hybridizing sequences and the frequency of occurrence of subsets of that sequence within other non-identical sequences. Thus, equivalent conditions can be determined by varying one or more of these parameters while maintaining a similar degree of identity or similarity between the two nucleic acid molecules. Typically, conditions are used such that sequences at least about 60%, at least about 70%, at least about 80%, at least about 90% or at least about 95% or more identical to each other remain hybridized to one another. By varying hybridization conditions from a level of stringency at which no hybridization occurs to a level at which hybridization is first observed, conditions that will allow a given sequence to hybridize (*e.g.*, selectively) with the most similar sequences in the sample can be determined.

Exemplary conditions are described in Krause, M. and S. Aaronson, 1991, *Meth. Enzymol.*, 200:546-556. Also, in, Ausubel, *et al.*, "*Current Protocols in Molecular Biology*", John Wiley & Sons, (1998), which describes the determination of washing conditions for moderate or low stringency conditions. Washing is the step in which conditions are usually set so as to determine a minimum level of complementarity of the hybrids. Generally, starting from the lowest temperature at which only homologous hybridization occurs, each °C by which the final wash temperature is reduced (holding SSC concentration constant) allows an increase by 1% in the maximum extent of mismatching among the sequences that hybridize. Generally, doubling the concentration of SSC results in an increase in T_m of ~17°C. Using these guidelines, the

washing temperature can be determined empirically for high, moderate or low stringency, depending on the level of mismatch sought.

For example, a low stringency wash can comprise washing in a solution containing 0.2XSSC/0.1% SDS for 10 minutes at room temperature; a moderate stringency wash can comprise washing in a prewarmed solution (42°C) solution containing 0.2XSSC/0.1% SDS for 15 minutes at 42°C; and a high stringency wash can comprise washing in prewarmed (68°C) solution containing 0.1XSSC/0.1%SDS for 15 minutes at 68°C. Furthermore, washes can be performed repeatedly or sequentially to obtain a desired result as known in the art. Equivalent conditions can be determined by varying one or more of the parameters given as an example, as known in the art, while maintaining a similar degree of identity or similarity between the target nucleic acid molecule and the primer or probe used.

The percent homology or identity of two nucleotide or amino acid sequences can be determined by aligning the sequences for optimal comparison purposes (*e.g.*, gaps can be introduced in the sequence of a first sequence for optimal alignment). The nucleotides or amino acids at corresponding positions are then compared, and the percent identity between the two sequences is a function of the number of identical positions shared by the sequences (*i.e.*, % identity = # of identical positions/total # of positions x 100). Where a position in one sequence is occupied by the same nucleotide or amino acid residue as the corresponding position in the other sequence, then the molecules are homologous at that position. As used herein, nucleic acid or amino acid "homology" is equivalent to nucleic acid or amino acid "identity". In certain embodiments, the length of a sequence aligned for comparison purposes is at least 30%, for example, at least 40%, in certain embodiments at least 60%, and in other embodiments at least 70%, 80%, 90% or 95% of the length of the reference sequence. The actual comparison of the two sequences can be accomplished by well-known methods, for example, using a mathematical algorithm. One, non-limiting example of such a mathematical algorithm is described in Karlin, S. and Altschul, S., 1993, *Proc. Natl. Acad. Sci. USA*, 90:5873-5877. Such an algorithm is incorporated into the

NBLAST and XBLAST programs (version 2.0) as described in Altschul, S *et al.*, 1997, *Nucleic Acids Res.*, 25:3389-3402. When utilizing BLAST and Gapped BLAST programs, the default parameters of the respective programs (*e.g.*, NBLAST) can be used. In one embodiment, parameters for sequence comparison can be set at score=100, wordlength=12, or can be varied (*e.g.*, W=5 or W=20).

Another preferred non-limiting example of a mathematical algorithm utilized for the comparison of sequences is the algorithm of Myers and Miller, CABIOS (1989). Such an algorithm is incorporated into the ALIGN program (version 2.0) which is part of the GCG sequence alignment software package. When utilizing the ALIGN program for comparing amino acid sequences, a PAM120 weight residue table, a gap length penalty of 12, and a gap penalty of 4 can be used. Additional algorithms for sequence analysis are known in the art and include ADVANCE and ADAM as described in Torelli, A and Robotti, C., 1994, *Comput. Appl. Biosci.*, 10:3-5; and FASTA described in Pearson, W. and Lipman, D., 1988, *Proc. Natl. Acad. Sci. USA*, 85:2444-8.

In another embodiment, the percent identity between two amino acid sequences can be accomplished using the GAP program in the GCG software package (Accelrys, Cambridge, UK) using either a Blossom 63 matrix or a PAM250 matrix, and a gap weight of 12, 10, 8, 6, or 4 and a length weight of 2, 3, or 4. In yet another embodiment, the percent identity between two nucleic acid sequences can be accomplished using the GAP program in the GCG software package, using a gap weight of 50 and a length weight of 3.

The present invention also provides isolated nucleic acid molecules that contain a fragment or portion that hybridizes under highly stringent conditions to a nucleotide sequence comprising a nucleotide sequence or fragment of the Inv8p23 genomic. The nucleic acid fragments of the invention are at least about 15, preferably at least about 18, 20, 23 or 25 nucleotides, and can be 30, 40, 50, 100, 200 or more nucleotides in length. Longer fragments, for example, 30 or more nucleotides in length, which encode antigenic polypeptides described herein are particularly useful, such as for the generation of antibodies as described below. In one embodiment, the nucleotide

sequences are fragments that comprise one or more polymorphic microsatellite markers. In another embodiment, the nucleotide sequences are fragments that comprise one or more single nucleotide polymorphisms in the Inv8p23 region.

In a related aspect, the nucleic acid fragments of the invention are used as probes or primers in assays such as those described herein. "Probes" or "primers" are oligonucleotides that hybridize in a base-specific manner to a complementary strand of nucleic acid molecules. By "base specific manner" is meant that the two sequences must have a degree of nucleotide complementarity sufficient for the primer or probe to hybridize. Accordingly, the primer or probe sequence is not required to be perfectly complementary to the sequence of the template. Non-complementary bases or modified bases can be interspersed into the primer or probe, provided that base substitutions do not inhibit hybridization. The nucleic acid template can also include "non-specific priming sequences" or "nonspecific sequences" to which the primer or probe has varying degrees of complementarities. Such probes and primers include polypeptide nucleic acids, as described in Nielsen, P. *et al.*, 1991, *Science*, 254:1497-1500.

A probe or primer comprises a region of nucleic acid that hybridizes to at least about 15, for example about 20-25, and in certain embodiments about 40, 50 or 75, consecutive nucleotides of a nucleic acid of the invention, such as a nucleic acid comprising a contiguous nucleic acid sequence the Inv8p23 region, fragment thereof, or the complement. In certain embodiments, a probe or primer comprises 100 or fewer nucleotides, in certain embodiments, from 6 to 50 nucleotides, for example, from 12 to 30 nucleotides. In other embodiments, the probe or primer is at least 70% identical to the contiguous nucleic acid sequence or to the complement of the contiguous nucleotide sequence, for example, at least 80% identical, in certain embodiments at least 90% identical, and in other embodiments at least 95% identical, or even capable of selectively hybridizing to the contiguous nucleic acid sequence or to the complement of the contiguous nucleotide sequence. Often, the probe or primer further comprises a label, *e.g.*, radioisotope, fluorescent compound, enzyme, or enzyme co-factor.

The nucleic acid molecules of the invention such as those described above can be identified and isolated using standard molecular biology techniques and the sequence information provided herein. For example, nucleic acid molecules can be amplified and isolated by the polymerase chain reaction using synthetic oligonucleotide primers designed based on one or more of the sequences contained in the Inv8p23 region, preferably those sequences that establish the orientation of the Inv8p23 inverted fragment (see generally *PCR Technology: Principles and Applications for DNA Amplification* (ed. H.A. Erlich, Freeman Press, NY, NY, 1992); *PCR Protocols: A Guide to Methods and Applications* (Eds. Innis, *et al.*, Academic Press, San Diego, CA, 1990); Mattila, P. *et al.*, 1991, *Nucleic Acids Res.*, 19:4967-4973; Eckert, K. and Kunkel, T., 1991, *PCR Methods Appl.*, 1:17-24; PCR (eds. McPherson *et al.*, IRL Press, Oxford); and U.S. Patent No. 4,683,202). The nucleic acid molecules can be amplified using cDNA, mRNA or genomic DNA as a template, cloned into an appropriate vector and characterized by DNA sequence analysis.

Other suitable amplification methods include the ligase chain reaction (LCR) (see Wu, D. and Wallace, R., 1989, *Genomics*, 4:560-569; Landegren, U. *et al.*, 1988, *Science*, 241:1077-1080), transcription amplification (Kwoh, D. *et al.*, 1989, *Proc. Natl. Acad. Sci. USA*, 86:1173-1177), and self-sustained sequence replication (Guatelli *et al.*, 1990, *Proc. Nat. Acad. Sci. USA*, 87:1874-1878) and nucleic acid based sequence amplification (NASBA). The latter two amplification methods involve isothermal reactions based on isothermal transcription, which produce both single stranded RNA (ssRNA) and double stranded DNA (dsDNA) as the amplification products in a ratio of about 30 or 100 to 1, respectively.

The amplified DNA can be labeled (*e.g.*, with radiolabel or other reporter molecule) and used as a probe for screening a cDNA library derived from human cells, mRNA in zap express, ZIPLOX or other suitable vector. Corresponding clones can be isolated, DNA can obtained following *in vivo* excision, and the cloned insert can be sequenced in either or both orientations by art recognized methods to identify the correct reading frame encoding a polypeptide of the appropriate molecular weight. For

example, the direct analysis of the nucleotide sequence of nucleic acid molecules of the present invention can be accomplished using well-known methods that are commercially available (see, for example, Sambrook *et al.*, *Molecular Cloning, A Laboratory Manual* (2nd Ed., CSHP, New York 1989); Zyskind *et al.*, *Recombinant DNA Laboratory Manual*, (Acad. Press, 1988)). Using these or similar methods, the polypeptide and the DNA encoding the polypeptide can be isolated, sequenced and further characterized.

In general, the isolated nucleic acid sequences of the invention can be used as molecular weight markers on Southern gels, and as chromosome markers that are labeled to map related gene positions. The nucleic acid sequences can also be used to compare with endogenous DNA sequences in patients to identify genetic disorders (*e.g.*, a predisposition for or susceptibility to PD or a comorbid disorder), and as probes, such as to hybridize and discover related DNA sequences or to subtract out known sequences from a sample. The nucleic acid sequences can further be used to derive primers for genetic fingerprinting, to raise anti-polypeptide antibodies using DNA immunization techniques, and as an antigen to raise anti-DNA antibodies or elicit immune responses. Portions or fragments of the nucleotide sequences identified herein (and the corresponding complete gene sequences) can be used in numerous ways as polynucleotide reagents. For example, these sequences can be used to: (i) map their respective genes on a chromosome; and, thus, locate gene regions associated with genetic disease; (ii) identify an individual from a minute biological sample (tissue typing); and (iii) aid in forensic identification of a biological sample. Additionally, the nucleotide sequences of the invention can be used to identify and express recombinant polypeptides for analysis, characterization or therapeutic use, or as markers for tissues in which the corresponding polypeptide is expressed, either constitutively, during tissue differentiation, or in diseased states. The nucleic acid sequences can additionally be used as reagents in the screening and/or diagnostic assays described herein, and can also be included as components of kits (*e.g.*, reagent kits) for use in the screening and/or diagnostic assays described herein.

Another aspect of the invention pertains to nucleic acid constructs containing a nucleic acid molecule derived from the Inv8p23 region. The constructs comprise a vector (*e.g.*, an expression vector) into which a sequence derived from the Inv8p23 region has been inserted in a sense or antisense orientation. As used herein, the term "vector" refers to a nucleic acid molecule capable of transporting another nucleic acid to which it has been linked. One type of vector is a "plasmid", which refers to a circular double stranded DNA loop into which additional DNA segments can be ligated. Another type of vector is a viral vector, wherein additional DNA segments can be ligated into the viral genome. Certain vectors are capable of autonomous replication in a host cell into which they are introduced (*e.g.*, bacterial vectors having a bacterial origin of replication and episomal mammalian vectors). Other vectors (*e.g.*, non-episomal mammalian vectors) are integrated into the genome of a host cell upon introduction into the host cell, and thereby are replicated along with the host genome. Moreover, certain vectors, *e.g.*, expression vectors, are capable of directing the expression of genes to which they are operably linked. In general, expression vectors of utility in recombinant DNA techniques are often in the form of plasmids. However, the invention is intended to include such other forms of expression vectors, such as viral vectors (*e.g.*, replication defective retroviruses, adenoviruses and adeno-associated viruses) that serve equivalent functions.

Preferred recombinant expression vectors of the invention comprise a nucleic acid molecule of the invention in a form suitable for expression of the nucleic acid molecule in a host cell. This means that the recombinant expression vectors include one or more regulatory sequences, selected on the basis of the host cells to be used for expression, that are operably linked to the nucleic acid sequence to be expressed. Within a recombinant expression vector, "operably linked" or "operatively linked" is intended to mean that the nucleotide sequence of interest is linked to the regulatory sequence(s) in a manner that allows for expression of the nucleotide sequence (*e.g.*, in an *in vitro* transcription/translation system or in a host cell when the vector is introduced into the host cell). The term "regulatory sequence" is intended to include

promoters, enhancers and other expression control elements (*e.g.*, polyadenylation signals). Such regulatory sequences are described, for example, in Goeddel, D. 1990, *Methods Enzymol.*, 185:3-7. Regulatory sequences include those that direct constitutive expression of a nucleotide sequence in many types of host cell and those that direct expression of the nucleotide sequence only in certain host cells (*e.g.*, tissue-specific regulatory sequences). It will be appreciated by those skilled in the art that the design of the expression vector can depend on such factors as the choice of the host cell to be transformed and the level of expression of polypeptide desired. The expression vectors of the invention can be introduced into host cells to thereby produce polypeptides, including fusion polypeptides, encoded by nucleic acid molecules as described herein.

The recombinant expression vectors of the invention can be designed for expression of a polypeptide of the invention in prokaryotic or eukaryotic cells, *e.g.*, bacterial cells such as *E. coli*, insect cells (using baculovirus expression vectors), yeast cells or mammalian cells. Suitable host cells are discussed further in Goeddel, *supra*. Alternatively, the recombinant expression vector can be transcribed and translated *in vitro*, for example using T7 promoter regulatory sequences and T7 polymerase.

Another aspect of the invention pertains to host cells into which a recombinant expression vector of the invention has been introduced. The terms "host cell" and "recombinant host cell" are used interchangeably herein. It is understood that such terms refer not only to the particular subject cell but also to the progeny or potential progeny of such a cell. Because certain modifications can occur in succeeding generations due to either mutation or environmental influences, such progeny may not, in fact, be identical to the parent cell, but are still included within the scope of the term as used herein.

A host cell can be any prokaryotic or eukaryotic cell. For example, a nucleic acid molecule of the invention can be expressed in bacterial cells (*e.g.*, *E. coli*), insect cells, yeast or mammalian cells (such as Chinese hamster ovary cells (CHO) or COS cells). Other suitable host cells are known to those skilled in the art.

Vector DNA can be introduced into prokaryotic or eukaryotic cells via conventional transformation or transfection techniques. As used herein, the terms "transformation" and "transfection" are intended to refer to a variety of art-recognized techniques for introducing a foreign nucleic acid molecule (*e.g.*, DNA) into a host cell, including calcium phosphate or calcium chloride co-precipitation, DEAE-dextran-mediated transfection, lipofection, or electroporation. Suitable methods for transforming or transfecting host cells can be found in Sambrook, *et al.*, (*supra*), and other laboratory manuals.

For stable transfection of mammalian cells, it is known that, depending upon the expression vector and transfection technique used, only a small fraction of cells integrate the foreign DNA into their genome. In order to identify and select these integrants, a gene that encodes a selectable marker (*e.g.*, for resistance to antibiotics) is generally introduced into the host cells along with the gene of interest. Preferred selectable markers include those that confer resistance to drugs, such as, for example, G418, hygromycin and methotrexate. Nucleic acid molecules encoding a selectable marker can be introduced into a host cell on the same vector as the nucleic acid molecule of the invention or can be introduced on a separate vector. Cells stably transfected with the introduced nucleic acid molecule can be identified by drug selection (*e.g.*, cells that have incorporated the selectable marker gene will survive, while the other cells die).

A host cell of the invention, such as a prokaryotic or eukaryotic host cell in culture, can be used to produce (*i.e.*, express) a polypeptide expressed by one or more genes in the Inv8p23 region. Accordingly, the invention further provides methods for producing a polypeptide using the host cells of the invention. In one embodiment, the method comprises culturing the host cell of invention (into which a recombinant expression vector encoding a polypeptide of the invention has been introduced) in a suitable medium such that the polypeptide is produced. In another embodiment, the method further comprises isolating the polypeptide from the medium or the host cell.

The host cells of the invention can also be used to produce nonhuman transgenic animals. For example, in one embodiment, a host cell of the invention is a fertilized oocyte or an embryonic stem cell into which a nucleic acid molecule of the invention has been introduced. Such host cells can then be used to create non-human transgenic animals in which exogenous nucleotide sequences have been introduced into the genome or homologous recombinant animals in which endogenous nucleotide sequences have been altered. Such animals are useful for studying the function and/or activity of the nucleotide sequence and polypeptide encoded by the sequence and for identifying and/or evaluating modulators of their activity. As used herein, a "transgenic animal" is a non-human animal, preferably a mammal, more preferably a rodent such as a rat or mouse, in which one or more of the cells of the animal include a transgene. Other examples of transgenic animals include non-human primates, sheep, dogs, cows, goats, chickens and amphibians. A transgene is exogenous DNA that is integrated into the genome of a cell from which a transgenic animal develops and remains in the genome of the mature animal, thereby directing the expression of an encoded gene product in one or more cell types or tissues of the transgenic animal. As used herein, an "homologous recombinant animal" is a non-human animal, preferably a mammal, more preferably a mouse, in which an endogenous gene has been altered by homologous recombination between the endogenous gene and an exogenous DNA molecule introduced into a cell of the animal, *e.g.*, an embryonic cell of the animal, prior to development of the animal.

Methods for generating transgenic animals via embryo manipulation and microinjection, particularly animals such as mice, have become conventional in the art and are described, for example, in U.S. Patent Nos. 4,736,866 and 4,870,009, U.S. Patent No. 4,873,191 and in Hogan, *Manipulating the Mouse Embryo* (Cold Spring Harbor Laboratory Press, Cold Spring Harbor, N.Y., 1986). Methods for constructing homologous recombination vectors and homologous recombinant animals are described further in Bradley, A. 1991, *Curr. Opin. Biotechnol.*, 2:823-829, and in PCT Publication Nos. WO 90/11354, WO 91/01140, WO 92/0968, and WO 93/04169. Clones of the

non-human transgenic animals described herein can also be produced according to the methods described in Wilmut, I. *et al.*, 1997, *Nature*, 385:810-813 and PCT Publication Nos. WO 97/07668 and WO 97/07669.

The present invention also pertains to isolated polypeptides encoded by one or more genes in the Inv8p23 region of chromosome 8, and fragments and variants thereof, as well as polypeptides encoded by nucleotide sequences described herein (*e.g.*, other splicing variants). The term "polypeptide" refers to a polymer of amino acids, and not to a specific length; thus, peptides, oligopeptides and proteins are included within the definition of a polypeptide. As used herein, a polypeptide is said to be "isolated" or "purified" when it is substantially free of cellular material when it is isolated from recombinant and non-recombinant cells, or free of chemical precursors or other chemicals when it is chemically synthesized. A polypeptide, however, can be joined to another polypeptide with which it is not normally associated in a cell (*e.g.*, in a "fusion protein") and still be "isolated" or "purified".

The polypeptides of the invention can be purified to homogeneity. It is understood, however, that preparations in which the polypeptide is not purified to homogeneity are useful. The critical feature is that the preparation allows for the desired function of the polypeptide, even in the presence of considerable amounts of other components. Thus, the invention encompasses various degrees of purity. In one embodiment, the language "substantially free of cellular material" includes preparations of the polypeptide having less than about 30% (by dry weight) other proteins (*i.e.*, contaminating protein), less than about 20% other proteins, less than about 10% other proteins, or less than about 5% other proteins.

When a polypeptide is recombinantly produced, it can also be substantially free of culture medium, *i.e.*, culture medium represents less than about 20%, less than about 10%, or less than about 5% of the volume of the polypeptide preparation. The language "substantially free of chemical precursors or other chemicals" includes preparations of the polypeptide in which it is separated from chemical precursors or other chemicals that are involved in its synthesis. In one embodiment, the language "substantially free

of chemical precursors or other chemicals" includes preparations of the polypeptide having less than about 30% (by dry weight) chemical precursors or other chemicals, less than about 20% chemical precursors or other chemicals, less than about 10% chemical precursors or other chemicals, or less than about 5% chemical precursors or other chemicals.

Variant polypeptides include a substantially homologous polypeptide encoded by the same genetic locus in an organism, *e.g.*, an allelic variant, an ortholog, as well as other splicing variants. Variants also encompass polypeptides derived from other genetic loci in an organism, *e.g.*, a homolog. Variants also include polypeptides substantially homologous or identical to these polypeptides but derived from another organism, *i.e.*, an ortholog. Variants also include polypeptides that are substantially homologous or identical to these polypeptides that are produced by chemical synthesis. Variants also include polypeptides that are substantially homologous or identical to these polypeptides that are produced by recombinant methods.

As used herein, two polypeptides (or a region of the polypeptides) are substantially homologous or identical when the amino acid sequences are at least about 45-55%, in certain embodiments at least about 70-75%, and in other embodiments at least about 80-85%, and in others greater than about 90% or more homologous or identical. The invention also encompasses polypeptides having a lower degree of identity but having sufficient similarity so as to perform one or more of the same functions performed by a polypeptide encoded by a nucleic acid molecule of the invention. Similarity is determined by conserved amino acid substitution. Such substitutions are those that substitute a given amino acid in a polypeptide by another amino acid of like characteristics. Conservative substitutions are likely to be phenotypically silent. Typically seen as conservative substitutions are the replacements, one for another, among the aliphatic amino acids Ala, Val, Leu and Ile; interchange of the hydroxyl residues Ser and Thr, exchange of the acidic residues Asp and Glu, substitution between the amide residues Asn and Gln, exchange of the basic residues Lys and Arg and replacements among the aromatic residues Phe and Tyr. Guidance

concerning which amino acid changes are likely to be phenotypically silent are found in Bowie, J. *et al.*, 1990, *Science*, 247:1306-1310.

A variant polypeptide can differ in amino acid sequence by one or more substitutions, deletions, insertions, inversions, fusions, and truncations or a combination of any of these. Further, variant polypeptides can be fully functional or can lack function in one or more activities. Fully functional variants typically contain only conservative variation or variation in non-critical residues or in non-critical regions. Functional variants can also contain substitution of similar amino acids that result in no change or an insignificant change in function. Alternatively, such substitutions can positively or negatively affect function to some degree. Non-functional variants typically contain one or more non-conservative amino acid substitutions, deletions, insertions, inversions, or truncation or a substitution, insertion, inversion, or deletion in a critical residue or critical region.

Amino acids that are essential for function can be identified by methods known in the art, such as site-directed mutagenesis or alanine-scanning mutagenesis (Cunningham, B. and Wells, J., 1989, *Science*, 244:1081-1085). The latter procedure introduces single alanine mutations at every residue in the molecule. The resulting variant molecules are then tested for biological activity. Sites that are critical for polypeptide activity can also be determined by structural analysis such as crystallization, nuclear magnetic resonance or photoaffinity labeling (Smith, L. *et al.*, 1992, *J. Mol. Biol.*, 224:899-904; de Vos, A. *et al.*, 1992, *Science*, 255:306-312).

The invention also includes polypeptide fragments of the polypeptides of the invention. The invention also encompasses fragments of the variants of the polypeptides described herein. As used herein, a fragment comprises at least 6 contiguous amino acids. Useful fragments include those that retain one or more of the biological activities of the polypeptide as well as fragments that can be used as an immunogen to generate polypeptide-specific antibodies. Biologically active fragments (peptides that are, for example, 6, 9, 12, 15, 16, 20, 30, 35, 36, 37, 38, 39, 40, 50, 100 or more amino acids in length) can comprise a domain, segment, or motif that has been

identified by analysis of the polypeptide sequence using well-known methods, *e.g.*, signal peptides, extracellular domains, one or more transmembrane segments or loops, ligand binding regions, zinc finger domains, DNA binding domains, acylation sites, glycosylation sites, or phosphorylation sites. Fragments can be discrete (not fused to other amino acids or polypeptides) or can be within a larger polypeptide. Further, several fragments can be comprised within a single larger polypeptide. In one embodiment a fragment designed for expression in a host can have heterologous pre- and pro-polypeptide regions fused to the amino terminus of the polypeptide fragment and an additional region fused to the carboxyl terminus of the fragment.

The invention provides chimeric or fusion polypeptides. These comprise a polypeptide of the invention operatively linked to a heterologous protein or polypeptide having an amino acid sequence not substantially homologous to the polypeptide. "Operatively linked" indicates that the polypeptide and the heterologous protein are fused in-frame. The heterologous protein can be fused to the N-terminus or C-terminus of the polypeptide. In one embodiment the fusion polypeptide does not affect function of the polypeptide *per se*. For example, the fusion polypeptide can be a GST-fusion polypeptide in which the polypeptide sequences are fused to the C-terminus of the GST sequences. Other types of fusion polypeptides include, but are not limited to, enzymatic fusion polypeptides, for example β-galactosidase fusions, yeast two-hybrid GAL fusions, poly-His fusions and Ig fusions. Such fusion polypeptides, particularly poly-His fusions, can facilitate the purification of recombinant polypeptide. In certain host cells (*e.g.*, mammalian host cells), expression and/or secretion of a polypeptide can be increased by using a heterologous signal sequence. Therefore, in another embodiment, the fusion polypeptide contains a heterologous signal sequence at its N-terminus.

EP-A-O 464 533 discloses fusion proteins comprising various portions of immunoglobulin constant regions. The Fc is useful in therapy and diagnosis and thus results, for example, in improved pharmacokinetic properties (EP-A 0232 262). In drug discovery, for example, human proteins have been fused with Fc portions for the purpose of high-throughput screening assays to identify antagonists. Bennett, D. *et al.*,

1995, *J. Mol. Recognit.*, 8:52-58, and Johanson, K. *et al.*, 1995, *J. Biol. Chem.*, 270:9459-9471. Thus, this invention also encompasses soluble fusion polypeptides containing a polypeptide of the invention and various portions of the constant regions of heavy or light chains of immunoglobulins of various subclasses (IgG, IgM, IgA, IgE).

A chimeric or fusion polypeptide can be produced by standard recombinant DNA techniques. For example, DNA fragments coding for the different polypeptide sequences are ligated together in-frame in accordance with conventional techniques. In another embodiment, the fusion gene can be synthesized by conventional techniques including automated DNA synthesizers. Alternatively, PCR amplification of nucleic acid fragments can be carried out using anchor primers which give rise to complementary overhangs between two consecutive nucleic acid fragments that can subsequently be annealed and re-amplified to generate a chimeric nucleic acid sequence (see Ausubel *et al.*, *Current Protocols in Molecular Biology*, 1992). Moreover, many expression vectors are commercially available that already encode a fusion moiety (*e.g.*, a GST protein). A nucleic acid molecule encoding a polypeptide of the invention can be cloned into such an expression vector such that the fusion moiety is linked in-frame to the polypeptide.

The isolated polypeptide can be purified from cells that naturally express it, purified from cells that have been altered to express it (recombinant), or synthesized using known protein synthesis methods. In one embodiment, the polypeptide is produced by recombinant DNA techniques. For example, a nucleic acid molecule encoding the polypeptide is cloned into an expression vector, the expression vector introduced into a host cell and the polypeptide expressed in the host cell. The polypeptide can then be isolated from the cells by an appropriate purification scheme using standard protein purification techniques.

In general, polypeptides of the present invention can be used as a molecular weight marker on SDS-PAGE gels or on molecular sieve gel filtration columns using art-recognized methods. The polypeptides of the present invention can be used to raise antibodies or to elicit an immune response. The polypeptides can also be used as a

reagent, *e.g.*, a labeled reagent, in assays to quantitatively determine levels of the polypeptide or a molecule to which it binds (*e.g.*, a receptor or a ligand) in biological fluids. The polypeptides can also be used as markers for cells or tissues in which the corresponding polypeptide is preferentially expressed, either constitutively, during tissue differentiation, or in a diseased state. The polypeptides can be used to isolate a corresponding binding agent, *e.g.*, receptor or ligand, such as, for example, in an interaction trap assay, and to screen for peptide or small molecule antagonists or agonists of the binding interaction.

Polyclonal and/or monoclonal antibodies that specifically bind one form of the gene product but not to the other form of the gene product are also provided. Antibodies are also provided which bind a portion of either the variant or the reference gene product that contains the polymorphic site or sites. The term "antibody" as used herein refers to immunoglobulin molecules and immunologically active portions of immunoglobulin molecules, *i.e.*, molecules that contain an antigen-binding site that specifically binds an antigen. A molecule that specifically binds to a polypeptide of the invention is a molecule that binds to that polypeptide or a fragment thereof, but does not substantially bind other molecules in a sample, *e.g.*, a biological sample, which naturally contains the polypeptide. Examples of immunologically active portions of immunoglobulin molecules include F(ab) and $F(ab')_2$ fragments, which can be generated by treating the antibody with an enzyme such as pepsin. The invention provides polyclonal and monoclonal antibodies that bind to a polypeptide of the invention. The term "monoclonal antibody" or "monoclonal antibody composition", as used herein, refers to a population of antibody molecules that contain only one species of an antigen-binding site capable of immunoreacting with a particular epitope of a polypeptide of the invention. A monoclonal antibody composition thus typically displays a single binding affinity for a particular polypeptide of the invention with which it immunoreacts.

Polyclonal antibodies can be prepared as described above by immunizing a suitable subject with a desired immunogen, *e.g.*, polypeptide of the invention or fragment thereof. The antibody titer in the immunized subject can be monitored over

time by standard techniques, such as with an enzyme linked immunosorbent assay (ELISA) using immobilized polypeptide. If desired, the antibody molecules directed against the polypeptide can be isolated from the mammal (*e.g.*, from the blood) and further purified by well-known techniques, such as protein A chromatography to obtain the IgG fraction. At an appropriate time after immunization, *e.g.*, when the antibody titers are highest, antibody-producing cells can be obtained from the subject and used to prepare monoclonal antibodies by standard techniques, such as the hybridoma technique originally described by Kohler, G. and Milstein, C. (1975, *Nature*, 256:495-497), the human B cell hybridoma technique (Kozbor, D and Roder, J., 1983, *Int. Arch. Allergy Appl. Immunol.*, 72:260-266), the EBV-hybridoma technique (Cole *et al.* (1985), *Monoclonal Antibodies and Cancer Therapy*, Alan R. Liss, Inc., pp. 77-96) or trioma techniques. The technology for producing hybridomas is well known (see generally *Current Protocols in Immunology* (1994) Coligan *et al.* (eds.) John Wiley & Sons, Inc., New York, NY). Briefly, an immortal cell line (typically a myeloma) is fused to lymphocytes (typically splenocytes) from a mammal immunized with an immunogen as described above, and the culture supernatants of the resulting hybridoma cells are screened to identify a hybridoma producing a monoclonal antibody that binds a polypeptide of the invention.

Any of the many well known protocols used for fusing lymphocytes and immortalized cell lines can be applied for the purpose of generating a monoclonal antibody to a polypeptide of the invention (see, *e.g.*, *Current Protocols in Immunology, supra*; Galfre, G. *et al.*, 1977, *Nature*, 266:550-552; R.H. Kenneth, in *Monoclonal Antibodies: A New Dimension In Biological Analyses*, Plenum Publishing Corp., New York, New York (1980); and Lerner, E., 1981, *Yale J. Biol. Med.*, 54:387-402. Moreover, the ordinarily skilled worker will appreciate that there are many variations of such methods that also would be useful.

Alternative to preparing monoclonal antibody-secreting hybridomas, a monoclonal antibody to a polypeptide of the invention can be identified and isolated by screening a recombinant combinatorial immunoglobulin library (*e.g.*, an antibody phage

display library) with the polypeptide to thereby isolate immunoglobulin library members that bind the polypeptide. Kits for generating and screening phage display libraries are commercially available (*e.g.*, the Pharmacia *Recombinant Phage Antibody System*, Catalog No. 27-9400-01; and the Stratagene *Surf*ZAP™ Phage Display Kit, Catalog No. 240612). Additionally, examples of methods and reagents particularly amenable for use in generating and screening antibody display library can be found in, for example, U.S. Patent No. 5,223,409; PCT Publication No. WO 92/18619; PCT Publication No. WO 91/17271; PCT Publication No. WO 92/20791; PCT Publication No. WO 92/15679; PCT Publication No. WO 93/01288; PCT Publication No. WO 92/01047; PCT Publication No. WO 92/09690; PCT Publication No. WO 90/02809; Fuchs, P. *et al.*, 1991, *Biotechnology (N.Y.)*, 9:1369-1372; Hay, B. *et al.*, 1992, *Hum. Antibodies Hybridomas*, 3:81-85; Huse, W. *et al.*, 1989, *Science*, 246:1275-1281; Griffiths, A. *et al.*, 1993, *EMBO J.*, 12:725-734.

Additionally, recombinant antibodies, such as chimeric and humanized monoclonal antibodies, comprising both human and non-human portions, which can be made using standard recombinant DNA techniques, are within the scope of the invention. Such chimeric and humanized monoclonal antibodies can be produced by recombinant DNA techniques known in the art.

In general, antibodies of the invention (*e.g.*, a monoclonal antibody) can be used to isolate a polypeptide of the invention by standard techniques, such as affinity chromatography or immunoprecipitation. A polypeptide-specific antibody can facilitate the purification of natural polypeptide from cells and of recombinantly produced polypeptide expressed in host cells. Moreover, an antibody specific for a polypeptide of the invention can be used to detect the polypeptide (*e.g.*, in a cellular lysate, cell supernatant, or tissue sample) in order to evaluate the abundance and pattern of expression of the polypeptide. Antibodies can be used diagnostically to monitor protein levels in tissue as part of a clinical testing procedure, *e.g.*, to determine the efficacy of a given treatment regimen. Coupling the antibody to a detectable substance can facilitate detection. Examples of detectable substances include various enzymes, prosthetic

groups, fluorescent materials, luminescent materials, bioluminescent materials, and radioactive materials. Examples of suitable enzymes include horseradish peroxidase, alkaline phosphatase, β-galactosidase, or acetylcholinesterase; examples of suitable prosthetic group complexes include streptavidin/biotin and avidin/biotin; examples of suitable fluorescent materials include umbelliferone, fluorescein, fluorescein isothiocyanate, rhodamine, dichlorotriazinylamine fluorescein, dansyl chloride or phycoerythrin; an example of a luminescent material includes luminol; examples of bioluminescent materials include luciferase, luciferin, and aequorin, and examples of suitable radioactive material include ^{125}I, ^{131}I, ^{35}S or ^{3}H.

The nucleic acids, probes, primers, polypeptides and antibodies described herein can be used in methods of diagnosis of PD and/or one or more comorbid disorders or of a susceptibility to PD and/or one or more comorbid disorders, as well as in kits useful for diagnosis of PD and/or one or more comorbid disorders or a susceptibility to PD and/or one or more comorbid disorders. In one embodiment, the kit comprises primers as described herein, wherein the primers detect one or more of the markers identified herein.

In one embodiment of the invention, diagnosis of PD and/or one or more comorbid disorders or susceptibility to PD and/or one or more comorbid disorders is made by detecting the inversion Inv8p23 allele as described herein. The occurrence of this allele can result in altered expression of one or more genes contained in the Inv8p23 genomic region. For example, if the breakpoints of the inversion result in a frameshift alteration of a coding sequence of a gene, the frame shift can result in a change in the encoded amino acids, and/or can result in the generation of a premature stop codon, causing generation of a truncated polypeptide. For diagnostic applications, there could exist polymorphisms informative for prediction of disease risk that are in linkage disequilibrium with the functional polymorphism. Such a polymorphism can alter splicing sites, affect the stability or transport of mRNA, or otherwise affect the transcription or translation of the nucleic acid.

In a first method of diagnosing PD and/or one or more comorbid disorders or a susceptibility to PD and/or one or more comorbid disorders, hybridization methods, such as Southern analysis, Northern analysis, or *in situ* hybridizations, can be used (see *Current Protocols in Molecular Biology*, Ausubel, F. *et al.*, eds., John Wiley & Sons, including all supplements through 1999). For example, a biological sample from a test subject (a "test sample") of genomic DNA, RNA, or cDNA, is obtained from an individual suspected of having, being susceptible to or predisposed for PD and/or one or more comorbid disorders (the "test individual"). The individual can be an adult, child, or fetus. The test sample can be from any source that contains genomic DNA, such as a blood sample, sample of amniotic fluid, sample of cerebrospinal fluid, or tissue sample from skin, muscle, buccal or conjunctival mucosa, placenta, gastrointestinal tract or other organs. A test sample of DNA from fetal cells or tissue can be obtained by appropriate methods, such as by amniocentesis or chorionic villus sampling. The DNA, RNA, or cDNA sample is then examined to determine the presence or absence of the Inv8p23 allele. The presence of the allele or splicing variant can be indicated by hybridization of the nucleic acid in the genomic DNA, RNA, or cDNA to a nucleic acid probe.

To diagnose a susceptibility to PD and/or one or more comorbid disorders, a hybridization sample is contacted by at least one nucleic acid probe. A preferred probe for detecting mRNA or genomic DNA is a labeled nucleic acid probe capable of hybridizing to mRNA or genomic DNA sequences described herein. The nucleic acid probe can be, for example, a full-length nucleic acid molecule, or a portion thereof, such as an oligonucleotide of at least 15, 30, 50, 100, 250 or 500 nucleotides in length and sufficient to specifically hybridize under stringent conditions to appropriate mRNA or genomic DNA. The hybridization sample is maintained under conditions that are sufficient to allow specific hybridization to one or more markers in the Inv8p23 region. Specific hybridization, if present, is then detected using methods known in the art and described above. In one embodiment, specific hybridization of at least one of the

nucleic acid probes is indicative of the presence of the Inv8p23 allele, and is therefore diagnostic for a susceptibility to PD and/or one or more comorbid disorders.

Alternatively, a peptide nucleic acid (PNA) probe can be used instead of a nucleic acid probe in the hybridization methods described above. PNA is a DNA mimic having a peptide-like, inorganic backbone, such as N-(2-aminoethyl)glycine units, with an organic base (A, G, C, T or U) attached to the glycine nitrogen via a methylene carbonyl linker (see, for example, Nielsen, P. *et al.*, 1994, *Bioconjug. Chem.*, 5:3-7. The PNA probe can be designed to specifically hybridize to a gene having a polymorphism associated with a susceptibility to PD and/or one or more comorbid disorders.

In another method of the invention, analysis by restriction digestion can be used to detect a specific allele at a polymorphic site, if the polymorphism results in the creation or elimination of a restriction site, or alters the order of restriction sites in a sequence. If a restriction site is not naturally created, one can be created by PCR that depends on the polymorphism and allows genotyping. A test sample containing genomic DNA is obtained from the individual. Nucleic acid amplification methods, including but not limited to Polymerase Chain Reaction (PCR), Transcription Mediated Amplifications (TMA), and Ligase Mediate Amplification (LMA), can be used to amplify genomic regions. The digestion pattern of the relevant DNA fragment indicates the presence or absence of one or more markers or of the orientation of the Inv8p23 inversion fragment itself, and therefore indicates the presence or absence of this susceptibility to PD and/or one or more comorbid disorders. RFLP analysis can be conducted as described in the art (see Current Protocols in Molecular Biology, *supra*). Amplification techniques based upon detection of sequence of interest using reverse dot blot technology (linear array or strips) can be used and are described, for example, in U.S. Patent No. 5,468,613.

Sequence analysis can also be used to detect one or more markers described herein or the Inv8p23 allele. A test sample of DNA or RNA is obtained from the test individual. PCR or other appropriate methods can be used to amplify the region, and/or

its flanking sequences, if desired. The sequence can be determined using standard methods. The sequence of the region is compared with the known nucleic acid sequence, as appropriate. In one embodiment, the presence of at least one of the markers of the invention indicates that the individual has a susceptibility to PD and/or one or more comorbid disorders.

Allele-specific oligonucleotides can also be used to detect the presence of the Inv8p23 allele, through the use of dot-blot hybridization of amplified oligonucleotides with allele-specific oligonucleotide (ASO) probes (see, for example, Saiki, R. *et al.*, 1986, *Nature*, 324:163-166). An "allele-specific oligonucleotide" (also referred to herein as an "allele-specific oligonucleotide probe") is an oligonucleotide of approximately 10-50 base pairs, preferably approximately 15-30 base pairs, that specifically hybridizes to a DNA sequence contained in the Inv8p23 region, and that contains a sequence suitable for determining the orientation of the Inv8p23 inversion fragment. An allele-specific oligonucleotide probe can be prepared, using standard methods (see Current Protocols in Molecular Biology, *supra*). A test sample of DNA is obtained from an individual. PCR can be used to amplify the Inv8p23 region and its flanking sequences. The amplified DNA is dot-blotted, using standard methods (see Current Protocols in Molecular Biology, *supra*), and the blot is contacted with an oligonucleotide probe. The presence of specific hybridization of the probe to the amplified DNA is then detected. Specific hybridization of an allele-specific oligonucleotide probe to DNA from the individual is indicative of the presence or absence of the Inv8p23 inversion, and is therefore indicative of a susceptibility to PD and/or one or more comorbid disorders.

The invention further provides allele-specific oligonucleotides that hybridize to the reference or variant allele of a nucleic acid comprising a single nucleotide polymorphism or to the complement thereof. These oligonucleotides can be probes or primers.

An allele-specific primer hybridizes to a site on target DNA overlapping a polymorphism and only primes amplification of an allelic form to which the primer

exhibits perfect complementarity (Gibbs, R. *et al.*, 1989, *Nucleic Acids Res.*, 17:2437-2448). This primer is used in conjunction with a second primer that hybridizes at a distal site. Amplification proceeds from the two primers, resulting in a detectable product that indicates the particular allelic form is present. A control is usually performed with a second pair of primers, one of which shows a single base mismatch at the polymorphic site and the other of which exhibits perfect complementarity to a distal site. The single-base mismatch prevents amplification and no detectable product is formed. The method works best when the mismatch is included in the 3'-most position of the oligonucleotide aligned with the polymorphism because this position is most destabilizing to elongation from the primer (see, *e.g.*, WO 93/22456).

With the addition of such analogs as locked nucleic acids (LNAs), the size of primers and probes can be reduced to as few as 8 bases. LNAs are a novel class of bicyclic DNA analogs in which the 2' and 4' positions in the furanose ring are joined via an O-methylene (oxy-LNA), S-methylene (thio-LNA), or amino methylene (amino-LNA) moiety. Common to all of these LNA variants is an affinity toward complementary nucleic acids, which is by far the highest reported for a DNA analog. For example, particular all oxy-LNA nonamers have been shown to have melting temperatures of 64°C and 74°C where in complex with complementary DNA or RNA, respectively, as opposed to 28°C for both DNA and RNA for the corresponding DNA nonamer. Substantial increases in T_m are also obtained when LNA monomers are used in combination with standard DNA or RNA monomers. For primers and probes, depending on where the LNA monomers are included (*e.g.*, the 3' end, the 5'end, or in the middle), the T_m could be increased considerably.

In another embodiment, arrays of oligonucleotide probes that are complementary to target nucleic acid sequence segments from an individual, can be used to identify one or more markers or polymorphic alleles in the Inv8p23 region. For example, in one embodiment, an oligonucleotide linear array can be used. Oligonucleotide arrays typically comprise a plurality of different oligonucleotide probes that are coupled to a surface of a substrate in different known locations. These

oligonucleotide arrays, also described as "Genechips"™, have been generally described in the art, for example, U.S. Patent No. 5,143,854 and PCT patent publication Nos. WO 90/15070 and 92/10092. These arrays can generally be produced using mechanical synthesis methods or light directed synthesis methods that incorporate a combination of photolithographic methods and solid phase oligonucleotide synthesis methods (Fodor, S. *et al.*, 1991, *Science*, 251:767-777; Pirrung *et al.*, U.S. Patent No. 5,143,854 (see also PCT Application No. WO 90/15070) and Fodor *et al.*, PCT Publication No. WO 92/10092 and U.S. Patent No. 5,424,186) the entire teachings of each of which are incorporated by reference herein). Techniques for the synthesis of these arrays using mechanical synthesis methods are described in, *e.g.*, U.S. Patent No. 5,384,261, the entire teachings of which are incorporated by reference herein. In another embodiment, linear arrays or microarrays can be utilized.

Once an oligonucleotide array is prepared, a nucleic acid of interest is hybridized with the array and scanned for polymorphisms. Hybridization and scanning are generally carried out by methods described herein and also in, *e.g.*, Published PCT Application Nos. WO 92/10092 and WO 95/11995, and U.S. Patent No. 5,424,186, the entire teachings of which are incorporated by reference herein. In brief, a target nucleic acid sequence that includes one or more previously identified polymorphic markers is amplified by well-known amplification techniques, *e.g.*, PCR. Typically, this involves the use of primer sequences that are complementary to the two strands of the target sequence both upstream and downstream from the polymorphism. Asymmetric PCR techniques can also be used. Amplified target, generally incorporating a label, is then hybridized with the array under appropriate conditions. Upon completion of hybridization and washing of the array, the array is scanned to determine the position on the array to which the target sequence hybridizes. The hybridization data obtained from the scan is typically in the form of fluorescence intensities as a function of location on the array.

Although primarily described in terms of a single detection block, *e.g.*, for detection of a single polymorphism, arrays can include multiple detection blocks, and

thus be capable of analyzing multiple, specific polymorphisms. In alternate arrangements, it will generally be understood that detection blocks can be grouped within a single array or in multiple, separate arrays so that varying, optimal conditions can be used during the hybridization of the target to the array. For example, it will often be desirable to provide for the detection of those polymorphisms that fall within G-C rich stretches of a genomic sequence, separately from those falling in A-T rich segments. This allows for the separate optimization of hybridization conditions for each situation.

Additional description of use of oligonucleotide arrays for detection of polymorphisms can be found, for example, in U.S. Patents 5,858,659 and 5,837,832, the entire teachings of which are incorporated by reference herein.

Other methods of nucleic acid analysis can be used to detect one or more markers described herein or the Inv8p23 inversion allele. Representative methods include direct manual sequencing (Church, G. and Gilbert, W., 1988, *Proc. Natl. Acad. Sci. USA*, 81:1991-1995; Sanger, F. *et al.*, 1977, *Proc. Natl. Acad. Sci. USA*, 74:5463-5467; Beavis *et al.*, U.S. Patent No. 5,288,644); automated fluorescent sequencing; single-stranded conformation polymorphism assays (SSCP); clamped denaturing gel electrophoresis (CDGE); denaturing gradient gel electrophoresis (DGGE) (Sheffield, V. *et al.*, 1989, *Proc. Natl. Acad. Sci. USA*, 86:232-236), mobility shift analysis (Orita, M. *et al.*, 1989, *Proc. Natl. Acad. Sci. USA*, 86:2766-2770), restriction enzyme analysis (Flavell, R. *et al.*, 1978, *Cell*, 15:25-41; Geever, R. *et al.*, 1981, *Proc. Natl. Acad. Sci. USA*, 78:5081-5085); heteroduplex analysis; chemical mismatch cleavage (CMC) (Cotton, R. *et al.*, 1985, *Proc. Natl. Acad. Sci. USA*, 85:4397-4401); RNase protection assays (Myers, R. *et al.*, 1985, *Science*, 230:1242-1246); use of polypeptides that recognize nucleotide mismatches, such as *E. coli* mutS protein, for example.

In one embodiment of the invention, diagnosis or detection of susceptibility to PD and or one or more comorbid disorders can be made by expression analysis by quantitative PCR (kinetic thermal cycling). This technique utilizing TaqMan ® or

Lightcycler® can be used to allow the identification of polymorphisms and whether a patient is homozygous or heterozygous.

Expression of one or more genes in the Inv8p23 region can be determined by a variety of methods, including enzyme linked immunosorbent assays (ELISAs), Western blots, immunoprecipitations and immunofluorescence. An alteration in expression can be, for example, an alteration in the quantitative polypeptide expression (*i.e.*, the amount of polypeptide produced). Various means of examining expression or composition can be used, including spectroscopy, colorimetry, electrophoresis, isoelectric focusing, and immunoassays (*e.g.*, David *et al.*, U.S. Patent No. 4,376,110) such as immunoblotting (see also Current Protocols in Molecular Biology, particularly chapter 10).

Kits (*e.g.*, reagent kits) useful in the methods of diagnosis comprise components useful in any of the methods described herein, including for example, hybridization probes or primers as described herein (*e.g.*, labeled probes or primers), reagents for detection of labeled molecules, restriction enzymes (*e.g.*, for RFLP analysis), allele-specific oligonucleotides, antibodies, means for amplification of nucleic acid sequences in the Inv8p23 genomic region, or means for analyzing the orientation if the Inv8p23 inversion fragment, etc. In one embodiment, a kit for diagnosing susceptibility to PD and/or one or more comorbid disorders can comprise primers for nucleic acid amplification of the Inv8p23 region.

The invention provides methods (also referred to herein as "screening assays") for identifying the presence of a nucleotide that hybridizes to a nucleic acid of the invention, as well as for identifying the presence of a polypeptide encoded by a nucleic acid of the invention. In one embodiment, the presence (or absence) of a nucleic acid molecule of interest (*e.g.*, a nucleic acid that has significant homology with a nucleic acid of the invention) in a sample can be assessed by contacting the sample with a nucleic acid comprising a nucleic acid of the invention under stringent conditions as described above, and then assessing the sample for the presence (or absence) of hybridization. In another embodiment, high stringency conditions are conditions

appropriate for selective hybridization. In another embodiment, a sample containing the nucleic acid molecule of interest is contacted with a nucleic acid containing a contiguous nucleotide sequence (*e.g.*, a primer or a probe as described above) that is at least partially complementary to a part of the nucleic acid molecule of interest, and the contacted sample is assessed for the presence or absence of hybridization. In another embodiment, the nucleic acid containing a contiguous nucleotide sequence is completely complementary to a part of the nucleic acid molecule of interest. In any of these embodiments, all or a portion of the nucleic acid of interest can be subjected to amplification prior to performing the hybridization.

In another embodiment, the presence (or absence) of a polypeptide of interest, such as a polypeptide of the invention or a fragment or variant thereof, in a sample can be assessed by contacting the sample with an antibody that specifically binds to the polypeptide of interest (*e.g.*, an antibody such as those described above), and then assessing the sample for the presence (or absence) of binding of the antibody to the polypeptide of interest.

In another embodiment, the invention provides methods for identifying agents (*e.g.*, fusion proteins, polypeptides, peptidomimetics, prodrugs, receptors, binding agents, antibodies, small molecules or other drugs, or ribozymes) that alter (*e.g.*, increase or decrease) the activity of the polypeptides described herein, or that otherwise interact with the polypeptides herein. For example, such agents can be agents that bind to polypeptides described herein; that have a stimulatory or inhibitory effect on, for example, activity of polypeptides of the invention; or that change (*e.g.*, enhance or inhibit) the ability of the polypeptides of the invention to interact with other agents (*e.g.*, receptors or other binding agents); or that alter posttranslational processing of the polypeptide (*e.g.*, agents that alter proteolytic processing to direct the polypeptide from where it is normally synthesized to another location in the cell, such as the cell surface; agents that alter proteolytic processing such that more polypeptide is released from the cell, etc).

In one embodiment, the invention provides assays for screening candidate or test agents that bind to or modulate the activity of polypeptides described herein (or biologically active portion(s) thereof), as well as agents identifiable by the assays. Test agents can be obtained using any of the numerous approaches in combinatorial library methods known in the art, including: biological libraries; spatially addressable parallel solid phase or solution phase libraries; synthetic library methods requiring deconvolution; the 'one-bead one-compound' library method; and synthetic library methods using affinity chromatography selection. The biological library approach is limited to polypeptide libraries, while the other four approaches are applicable to polypeptide, non-peptide oligomer or small molecule libraries of compounds.

In other embodiments of the invention, assays can be used to assess the impact of a test agent on the activity of a polypeptide of the invention (*i.e.*, one that results from the expression of one or more genes in the Inv8p23 inversion fragment or is disrupted as a result of the Inv8p23 inversion). The ability of the test agent to bind to a polypeptide of the invention can be determined, for example, by coupling the test agent to a radioisotope or enzymatic label such that binding of the test agent to the polypeptide can be determined by detecting the label, either directly or indirectly. Alternatively, test agents can be enzymatically labeled with, for example, horseradish peroxidase, alkaline phosphatase, or luciferase, and the enzymatic label detected by determination of conversion of an appropriate substrate to product. It is also within the scope of this invention to determine the ability of a test agent to interact with the polypeptide without the labeling of any of the interactants. For example, a microphysiometer can be used to detect the interaction of a test agent with a polypeptide of the invention without the labeling of either the test agent or polypeptide (McConnell, H. *et al.*, 1992, *Science*, 257:1906-1912). As used herein, a "microphysiometer" (*e.g.*, Cytosensor™) is an analytical instrument that measures the rate at which a cell acidifies its environment using a light-addressable potentiometric sensor (LAPS). Changes in this acidification rate can be used as an indicator of the interaction between ligand and polypeptide.

This invention further pertains to novel agents identified by the above-described screening assays. Accordingly, it is within the scope of this invention to further use an agent identified as described herein in an appropriate animal model. For example, an agent identified as described herein (*e.g.*, a test agent that is a modulating agent, an antisense nucleic acid molecule, a specific antibody, or a polypeptide-binding agent) can be used in an animal model to determine the efficacy, toxicity, or side effects of treatment with such an agent. Alternatively, an agent identified as described herein can be used in an animal model to determine the mechanism of action of such an agent. Furthermore, this invention pertains to uses of novel agents identified by the above-described screening assays for treatments as described herein.

The present invention also pertains to pharmaceutical compositions comprising agents described herein, particularly nucleotides encoding the polypeptides described herein; comprising polypeptides described herein and/or an agent that alters (*e.g.*, enhances or inhibits) expression of one or more genes in the Inv8p23 region as described herein. For instance, a polypeptide, protein, an agent that alters expression, or a binding agent or binding partner, fragment, fusion protein or prodrug thereof, or a nucleotide or nucleic acid construct (vector) comprising a nucleotide of the present invention, or an agent that alters polypeptide activity, can be formulated with a physiologically acceptable carrier or excipient to prepare a pharmaceutical composition. The carrier and composition can be sterile. The formulation should suit the mode of administration.

Suitable pharmaceutically acceptable carriers include but are not limited to water, salt solutions (*e.g.*, NaCl), saline, buffered saline, alcohols, glycerol, ethanol, gum arabic, vegetable oils, benzyl alcohols, polyethylene glycols, gelatin, carbohydrates such as lactose, amylose or starch, dextrose, magnesium stearate, talc, silicic acid, viscous paraffin, perfume oil, fatty acid esters, hydroxymethylcellulose, polyvinyl pyrolidone, etc., as well as combinations thereof. The pharmaceutical preparations can, if desired, be mixed with auxiliary agents, *e.g.*, lubricants, preservatives, stabilizers, wetting agents, emulsifiers, salts for influencing osmotic pressure, buffers, coloring,

flavoring and/or aromatic substances and the like which do not deleteriously react with the active agents.

The composition, if desired, can also contain minor amounts of wetting or emulsifying agents, or pH buffering agents. The composition can be a liquid solution, suspension, emulsion, tablet, pill, capsule, sustained release formulation, or powder. The composition can be formulated as a suppository, with traditional binders and carriers such as triglycerides. Oral formulation can include standard carriers such as pharmaceutical grades of mannitol, lactose, starch, magnesium stearate, polyvinyl pyrolidone, sodium saccharine, cellulose, magnesium carbonate, etc.

Methods of introduction of these compositions include, but are not limited to, intradermal, intramuscular, intraperitoneal, intraocular, intravenous, subcutaneous, topical, oral and intranasal. Other suitable methods of introduction can also include gene therapy (as described below), rechargeable or biodegradable devices, particle acceleration devises ("gene guns") and slow release polymeric devices. The pharmaceutical compositions of this invention can also be administered as part of a combinatorial therapy with other agents.

The composition can be formulated in accordance with the routine procedures as a pharmaceutical composition adapted for administration to human beings. For example, compositions for intravenous administration typically are solutions in sterile isotonic aqueous buffer. Where necessary, the composition can also include a solubilizing agent and a local anesthetic to ease pain at the site of the injection. Generally, the ingredients are supplied either separately or mixed together in unit dosage form, for example, as a dry lyophilized powder or water free concentrate in a hermetically sealed container such as an ampule or sachette indicating the quantity of active agent. Where the composition is to be administered by infusion, it can be dispensed with an infusion bottle containing sterile pharmaceutical grade water, saline or dextrose/water. Where the composition is administered by injection, an ampule of sterile water for injection or saline can be provided so that the ingredients can be mixed prior to administration.

For topical application, nonsprayable forms, viscous to semi-solid or solid forms comprising a carrier compatible with topical application and having a dynamic viscosity preferably greater than water, can be employed. Suitable formulations include but are not limited to solutions, suspensions, emulsions, creams, ointments, powders, enemas, lotions, sols, liniments, salves, aerosols, etc., which are, if desired, sterilized or mixed with auxiliary agents, *e.g.*, preservatives, stabilizers, wetting agents, buffers or salts for influencing osmotic pressure, etc. The agent can be incorporated into a cosmetic formulation. For topical application, also suitable are sprayable aerosol preparations wherein the active ingredient, preferably in combination with a solid or liquid inert carrier material, is packaged in a squeeze bottle or in admixture with a pressurized volatile, normally gaseous propellant, *e.g.*, pressurized air.

Agents described herein can be formulated as neutral or salt forms. Pharmaceutically acceptable salts include those formed with free amino groups such as those derived from hydrochloric, phosphoric, acetic, oxalic, tartaric acids, etc., and those formed with free carboxyl groups such as those derived from sodium, potassium, ammonium, calcium, ferric hydroxides, isopropylamine, triethylamine, 2-ethylamino ethanol, histidine, procaine, etc.

The agents are administered in a therapeutically effective amount. The amount of agents that will be therapeutically effective in the treatment of a particular disorder or condition will depend on the nature of the disorder or condition, and can be determined by standard clinical techniques. In addition, *in vitro* or *in vivo* assays can optionally be employed to help identify optimal dosage ranges. The precise dose to be employed in the formulation will also depend on the route of administration, and the seriousness of the symptoms of PD, and should be decided according to the judgment of a practitioner and each patient's circumstances. Effective doses can be extrapolated from dose-response curves derived from *in vitro* or animal model test systems.

The invention also provides a pharmaceutical pack or kit comprising one or more containers filled with one or more of the ingredients of the pharmaceutical compositions of the invention. Optionally associated with such container(s) can be a

notice in the form prescribed by a governmental agency regulating the manufacture, use or sale of pharmaceuticals or biological products, which notice reflects approval by the agency of manufacture, use of sale for human administration. The pack or kit can be labeled with information regarding mode of administration, sequence of drug administration (*e.g.*, separately, sequentially or concurrently), or the like. The pack or kit can also include means for reminding the patient to take the therapy. The pack or kit can be a single unit dosage of the combination therapy or it can be a plurality of unit dosages. In particular, the agents can be separated, mixed together in any combination, present in a single vial or tablet. Agents assembled in a blister pack or other dispensing means is preferred. For the purpose of this invention, unit dosage is intended to mean a dosage that is dependent on the individual pharmacodynamics of each agent and administered in FDA approved dosages in standard time courses.

The present invention encompasses methods of treatment (prophylactic and/or therapeutic) for PD and/or one or more comorbid disorders using an agent identified herein. A "therapeutic agent" is an agent that effectively treats PD and/or one or more comorbid disorders. Representative therapeutic agents include the following: nucleic acids or fragments or derivatives thereof described herein, particularly nucleotides encoding the polypeptides described herein and vectors comprising such nucleic acids (*e.g.*, a gene, cDNA, and/or mRNA, double-stranded interfering RNA, a nucleic acid encoding a polypeptide of the invention or active fragment or derivative thereof, or an oligonucleotide that can optionally comprise at least one polymorphism, antisense nucleic acids or small double-stranded interfering RNA, and other agents that alter (*e.g.*, inhibit or antagonize) gene expression or polypeptide activity. More than one therapeutic agent can be used concurrently, if desired.

The term, "treatment" as used herein, refers not only to ameliorating symptoms associated with the disease, but also preventing or delaying the onset of the disease, and also lessening the severity or frequency of symptoms of the disease, preventing or delaying the occurrence of a second episode of the disease or condition; and/or also lessening the severity or frequency of symptoms of the disease or condition.

The therapeutic agent(s) are administered in a therapeutically effective amount (*i.e.*, an amount that is sufficient to treat the disease, such as by ameliorating symptoms associated with the disease, preventing or delaying the onset of the disease, and/or also lessening the severity or frequency of symptoms of the disease). The amount that will be therapeutically effective in the treatment of a particular individual's disorder or condition will depend on the symptoms and severity of the disease, and can be determined by standard clinical techniques. In addition, *in vitro* or *in vivo* assays can optionally be employed to help identify optimal dosage ranges. The precise dose to be employed in the formulation will also depend on the route of administration, and the seriousness of the disease or disorder, and should be decided according to the judgment of a practitioner and each patient's circumstances. Effective doses can be extrapolated from dose-response curves derived from *in vitro* or animal model test systems.

The invention will be further described by the following non-limiting examples. The teachings of all publications cited herein are incorporated herein by reference in their entirety.

EXAMPLES

EXAMPLE 1

FISH experiments were initially conducted on material from the cell lines from individuals with PD to look for DUP25, a large duplication that has been reported to be associated with joint laxity and anxiety disorders in a Spanish population (Gratacos, M. *et al.*, 2001. *Cell*, 106:367-379). The region of chromosome 8 became interesting as a recombination map of the human genome was constructed, and discrepancies in the recombination pattern in this region were noted. The average genetic order of the markers was opposite to that from the reported human genome sequence (Kong, A. *et al.*, 2002. *Nat. Genet.*, 31:241-247). The inversion polymorphism was first reported by Giglio, S. *et al.* (2001, *Am. J. Hum. Genet.*, 68:874-883), who detected it from CEPH

genetic data. Although efforts aimed at cloning the breakpoints have made significant progress (Giglio, S. *et al.*, 2002. *Am. J. Hum. Genet.*, 71:276-285), the regions have not been narrowed to the extent necessary to design a simple PCR assay to determine the orientation. Until now, Inv8p23 had not been associated with any phenotype.

The evolutionary history of Inv8p23 has not been studied, and it is not known whether the inversion has occurred only once or multiple times. If the inversion has occurred only once, it is more likely that the common form is the ancestral one. This is supported by the analysis of mouse-human synteny in the region, which reveals reorganization of the human sequence in Build 33 (of the human genome) relative to the mouse sequence that is consistent with an inversion. The average genetic order is inconsistent with the physical order in Build 33, which thus represents the less frequent, or inverted, variant. However, more detailed studies of SNPs and haplotypes in the region are required before ancestral status can be assigned with certainty.

Cell lines were collected from PD patients to investigate the prevalence of DUP25 on chromosome 15q24-26 in Icelandic PD patients. DUP25 has been reported to be associated with anxiety disorders and hypermobility of the joints in a Spanish population (Gratacos, M. *et al.*, 2001. *Cell*, 106:367-379). DUP25 was not detected in the Icelandic population. Attention then shifted to studying the role of Inv8p23 in PD. FISH data were analyzed (FIGS. 2A and 2B) for the first group of 20 PD patients, and an excess of the less frequent inversion allele was discovered in PD cell lines compared to controls. Subsequent hybridizations confirmed that over 50 % of the chromosomes have the inverted allele in PD patients. Subsequent samples and chromosomal spreads were obtained (47 PD patients and 173 controls), and the frequency of the inversion was 47 % in PD patients vs. 36 %, in controls (two-sided Fisher exact test, $p = 0.07$) (FIG. 3).

While the FISH experiments clearly showed the association of the inverted allele with PD, FISH is not the ideal method to study large sets of patients since it is expensive, time consuming, and requires that cell lines or fresh blood samples are available. Therefore, association of other markers within the region of the inverted

segment were searched in order to (1) identify surrogate markers or haplotypes allowing the determination of orientation based on genotypes alone, and (2) to collect genetic data to characterize the inversion with regard to linkage disequilibrium and the evolutionary history of the region, and (3) to look for allelic association to panic disorder at markers in the region.

To identify surrogate markers we used DNA from the 173 control individuals with known orientation at 8p23, *i.e.*, samples from individuals that had been studied by the FISH measurements discussed above. Samples were genotyped, and, using microsatellite and SNP markers from the region, results were analyzed using NEMO, a program developed at deCode genetics (Grétarsdóttir, S. *et al.*, 2003, *Nat. Genet.*, 35(2) in press). FIG. 4 summarizes the association for those markers most strongly associated to the 8p23 orientation (R2>0.3). The association of markers with the orientation is strong and extensive throughout the region, even between markers from opposite ends of the inversion separated by a large distance. Recombination is supressed in heterozygotes and the two forms rarely mix by recombination such that each orientation has, over time, developed its own distribution of allelic frequencies at markers in the region, producing extensive linkage disequilibrium (LD) in the region when a random sample of chromosomes is analyzed.

The identification of surrogate markers allows for the increase in sample size for PD and controls, and also for the study additional psychiatric phenotypes.

Use of Surrogate markers to determine Inv8p23 orientation

As an example of how the genotypes of a single marker are used to detect orientation, consider the G allele of SG08S5 (the marker most strongly associated with the orientation) is estimated to have frequency 91.3% in inverted chromosomes, and 9.8% in the common orientation (FIG. 4). Using estimated population frequencies of the two orientation of 36.1% and 63.9%, and with the application of Bayes' rule, one can conclude that a chromosome with the G allele for SG08S5 has 84.1% chance to have the inversion, and a chromosome with the A allele for SG08S5 has 5.2 % chance

to have the inversion. Any marker correlated with the orientation can be utilized in similar manner.

Use of multiple surrogate markers to determine Inv8p23 orientation

Apart from using individual markers separately, using two or more markers jointly as haplotypes can further improve the specificity of predicting PD risk. For example, a haplotype with the A allele for SG08S71 and the G allele for DG00AAHBG has frequency of 43.3% in PD patients versus 29.3% in controls, giving a relative risk of 1.84 compared to other haplotypes, and a two-side p-value of 1.1×10^{-6}.

Orientation at 8p23 is associated with panic disorder and bipolar disorder

Using the data on the two most strongly correlated markers (SG08S5 and SG08S95) the frequency of the inverted order in 299 panic disorder patients is estimated to be 47 % compared 37% in 967 controls (two sided p-value of 0.0002). While the estimates of the frequencies in affected and control individuals are similar to those obtained in the smaller FISH study, the results are statistically more significant due to a large increase in the sample size. This demonstrates that the orientation is a risk factor for panic disorder. Similar results were obtained for bipolar disorder and bipolar disorder without panic disorder (see FIGS. 6A-6K, 7A-7K and 11A1-11A3, 11B1-11B12, 11C1-11C8, 11D1-11D8 and 11E1-11E8).

Allelic associations to PD and BPD

The allelic association displayed in FIGS. 5A-5D, 6A-6K and 7A-7K is for the association of specific alleles of the markers indicated to panic disorder, bipolar disorder, and bipolar disorder without panic disorder. Each of these markers can be used to diagnose these disorders or to assess risk of developing these disorders. The estimated risks are calculated based on the multiplicative model. For example, a heterozygous carrier of the inversion is estimated to have an estimated 1.52-fold risk compared to that of an individual carrying two copies of the common form, and a

homozygous carrier has an estimated 2.31-fold risk (1.52 x 1.52) compared to an individual homozygous for the common form.

The role of Inv8p23 in individuals diagnosed with psychiatric disorders other than panic disorder was also investigated. Individuals were recruited from the study of the genetics of anxiety disorders. The association with markers within the region show the same general pattern as for panic disorder, but the data is most extensive for panic disorder and bipolar disorder. FIGS. 5A-5D, 6A-6K and 7A-7K list the results of allelic association analysis for panic disorder, bipolar disorder, and bipolar disorder without panic disorder. From the data in FIG. 4, it can be seen that multiple markers in the region show an elevated relative risk. Furthermore, when association is detected, the alleles associated tend to be the same as those associated with the inverted form, but the associations are not as strong as for panic disorder as they are for the inversion itself. Considering all alleles with a relative risk value above 1.0 and prevalence above 5 % in the PD cohort (FIGS. 5A-5D; allele frequencies are shown in FIGS. 12A and 12B), it was observed that in nearly all cases the allele associated is either the same allele as is associated with the inverted form of the polymorphism (FIG. 4), or one of multiple alleles associated with the inverted form.

In addition to providing markers useful for detecting susceptibility to anxiety disorders (*e.g.*, PD, OCD, BPD and depression), the markers themselves provide significant insight as to the biological mechanism that causes such disorders. There are several mechanisms that can explain our findings. For example, insights into the biological mechanism can be gleaned from evolutionary history of the inversion allele. It is possible that the inversion occurred in a background containing a mutation that is the true susceptibility variant, or that such a mutation occurred soon after the inversion occurred. In these scenarios the true mutation is enriched on the inverted segment, but the orientation itself is not the actual cause of the effect. A more direct role of the orientation is also possible. Alternatively, the most straightforward explanation is that the inversion polymorphism is associated with the disruption of a gene or genes at the breakpoints. It is also possible that other properties of the genes are affected by the

orientation. Thus it is possible that the expression level of a gene or several genes in the region depends on the orientation of the segment. It is also possible that the inversion acts by changing the distance between genes and segments containing regulatory or enhancer elements that are on different sides of the breakpoints, thereby affecting regulation of genes, wherein the misregulation leads to the disorder.

In summary, the association of the rare variant of the inversion polymorphism to several mood disorders with risk ratios of 1.3-1.8 for carriers compared to non-carriers is demonstrated. The 8p23 inversion has strongest association to PD and bipolar disorder.

EXAMPLE 2

Other phenotypic effects associated with the inversion allele are also of interest. For example, PD comorbid conditions are of interest. For example, studies have shown that a correlation exists between cholesterol levels and panic disorder (Peter, H. *et al.*, 2002, *Can. J. Psychiatry*, 47:557-561; Haywood, C. *et al.*, 1989. *Am. J. Psychiatry*, 149:917-919; Bajwa, W. *et al.*, 1992. *Am. J. Psychiatry*, 149:376-378; Lacerda, A. *et al.*, 2000. *Arq. Neuropsiquiatr.*, 58(2B):408-411), generally indicating increased cholesterol levels in patients with PD. This is important in light of the fact that mortality due to cardiovascular disease is increased in the group (Fleet, R. and Beitman, B., 1998, *J Psychosom Res.*, 44:71-80). Squalene synthase, the first enzyme dedicated to cholesterol synthesis, is located within the inverted segment. Therefore, a study of the relationship between cholesterol levels and the inversion allele was initiated.

In this context it is interesting, that although panic disorder is classified as a psychiatric condition, many of its symptoms are physical. In particular, 7 of the 13 characteristic symptoms of a panic attack are also symptoms of a cardiovascular disease (Fleet, R. *et al.*, 1998, *J Psychosom Res.*, 44:81-90), and it has been estimated that approximately 25% of patients presenting to the ER for chest pain have PD. Of these patients, 80% are found to have atypical or non-cardiac chest pain (Fleet *et al.*, 1996, *Am. J. Med.*, 101:371-380). It is possible that some of the symptoms relating to the

function of the heart have to do with the expression levels of the GATA-4 transcription factor, a key element in heart development. Indeed, it is herein disclosed that the GATA-4 gene located within the inverted region is differentially expressed ($p < 0.05$). In this vein, an altered expression level of GATA-4 might be expected to have widespread effects, since the factor has been shown to regulate the expression of many genes, including genes potentially involved in the etiology of anxiety such as the adenosine A1 receptor (Rivkees S. *et al.*, 1999, *J. Biol. Chem.*, 274:14204-14209), and several genes involved in steroidogenesis (Tremblay, J. and Viger R., 2003, *J. Steroid Biochem. Mol. Biol.*, 85:291-298) including one of the key genes, Steroidogenic acute regulatory protein, which is located about 26 Mb centromeric of the inversion on chromosome 8. Several neurosteroids have been shown to be anxiolytic in animal models and potential hypersecretion of neurosteroids in PD patients has been reported (Brambilla, F. *et al.*, 2003, *Psychiatry Res.*, 118:107-116).

There are several other genes located within the inversion that are good candidates for influencing psychiatric conditions within the Inv8p23 genomic region. The idea that the orientation might affect the expression levels of several genes casts PD as a genomic disorder, and suggests that it should perhaps be viewed as a syndrome comprised of signs and symptoms arising from the effects of several genes.

Specifically, the MTMR9 gene is a member of the myotubularin (MTM) family, and forms a complex with MTMR9 and dephosphorylates phosphatidylinositol 3-phosphate and Ins(1,3)P2 in neuronal cells (Mochizuk, Y. and Majerus, P., 2003, *Proc. Natl. Acad. Sci. USA*, 100:9768-73). MTMR7 is one of the genes flanking the inversion region on the centromeric side. It has been postulated that inositol metabolisim is at the root of bipolar disorder (Atack, J., 1996, *Brain Res. Brain Res. Rev.*, 22:183-90). Cathepsin B and APP secretase have been implicated in brain disorders, for example Alzheimer's disease, and MTSR or methionine peptide sulfoxide reductase is involved in maintaining reduced form of methionine by reducing methionine sulfoxide, and such oxidative processes are important in the central nervous system. In fact, S-adenosyl-L-methionine, has been used as an antidepressant (Mischoulon, D. and Fava, M., 2002,

Am. J. Clin. Nutr., 76:1158S-1161S.). Within the duplicated regions at the boundaries the gene for USP17, deubiquinating enzyme is found within a 4.7 kb repeat. These and additional genes in the inverted region, and regions flanking the inversion region are listed in FIG. 9.

EXAMPLE 3

The method of high-throughput surrogate FISH genotyping is described. The method first uses FISH to identify the rearrangement status of a small set of individuals used as a training sample. These individuals are then genotyped for genetic variation using standard high-throughput technologies for microsatellite genetic markers, SNPs and INDELs. Markers, either individually or in haplotype combinations, that are highly correlated with the rearrangement are then genotyped on individuals who have no FISH data, and their rearrangement status is predicted. The method described here can be used to determine orientation of genomic rearrangement anywhere in the genome. For rearrangements that are shown to be associated with genetic disorders, this method can be applied as a diagnostic test for the disorder. As described herein, it has been discovered that one form of an inversion polymorphism on chromosome 8p23 is a risk factor for anxiety disorders, depression, and bipolar disorder.

Genetic study of anxiety, depression and comorbid conditions

All data, phenotypic information, and DNA samples, have been collected as a part of an extensive study of the genetics of psychiatric disorders. After sending out screening questionnaires to 30,000 Icelanders, over 11,500 responses were received. Analyzing the genealogical relationships among the responders, over 3,600 responders with scores indicative of depression, anxiety or both were identified. During the recruiting of families, additional cases were identified by screening relatives using the same questionnaire. When participants, recruited based on the questionnaire score, donated their blood samples, actual diagnoses were made as participants underwent the Composite International Diagnostic Interview (CIDI) (Wittchen HU, Perkonigg, A

(1996) *DIA-X SSQ*. Swetz und Zeitlinger, Swetz Test Services, Frankfurt; Peters, L. and Andrews, G., 1995, *Psychol. Med.*, 25:1269-1280), which yields diagnoses according to the DSM-IIIR and the ICD-10 systems. Each individual was considered affected by a psychiatric disorder if a diagnosis was made according to one or both systems. The National Bioethics Committee and the Data Protection Commission of Iceland approved the study. All person-identifying data were encrypted by the Data Protection Commission of Iceland using a third-party encryption system developed by deCODE genetics (Gulcher, J. *et al.*, 2000, *Eur. J. Hum. Genet.*, 8:739-742).

Fluorescence in-situ hybridization analysis

Metaphase chromosome spreads were prepared after a 24 h harvesting of human Ebstein Barr (EBV) transformed cell lines using standard cytogenetic methods. Cell line cultures were synchronized using bromo-deoxy-Uracil (BrdU, Sigma, St. Louis, MO) then the synchronized cultures were treated with a topoisomerase II inhibitor (ICRF154, BIOMOL), as described (Inazawa, J. *et al.*, 1994, *Cytogenet. Cell Genet.*, 65:130-135), in order to get high resolution prometaphase chromosomes. Slides were kept at room temperature (at least for 24 hours) until hybridization.

For hybridization, the slides were pretreated with RNAse A and pepsin, followed by washes in 2xSSC, pH 7.0. Post-fixation of the slides was done with 1% free formaldehyde followed by dehydration in ascending concentrations of ethanol (70%, 90% and 100%) for three minutes each at room temperature. Slides were denatured at 72°C in 70% formamide/2xSSC pH7.0 for 3min, quickly fixed in cold ethanol (-20°C) in ascending concentrations of ethanol (70%, 90% and 100%).

Probes were generated from BAC clones from the RPCI-11 library. All BAC probes (1 μg of each probe) were labeled by standard nick translation with either biotin 16-dUTP or digoxigenin 11-dUTP (Boehringer Mannheim). 50-60 ng of each probe were dried in a speedvac with 4 μg of cot1-DNA (BiGCO-BRL) and resuspended in a hybridization mix containing 50% deionized formamide, 2xSSC, 10% dextran sulphate pH 7.0. After heat denaturation (75°C for 5 min), 60 ng of each probe were applied to

each slide and sealed with rubber cement. Hybridization was performed overnight in a moist chamber at 37°C. Post hybridization washes were performed in two changes (5 min each) of 0.3xSSC/0.3% Triton X-100 (Merck) (pH 7.0) at 72°C followed by washes with 4xSSC/ 0.1% Triton X-100 (for 2 min) and with 4xSSC (for 5 min) at RT. Slides were incubated in blocking solution (Boehringer Mannheim) for 25 min. Detection was performed either with Avidin-FITC (Vector Laboratories), for the probes labeled with biotin, or with anti-digoxigenin-Rhodamine (Roche), for the probes labeled with digoxigenin), for 30-35 min at 37°C in a humid chamber then washed three times in 4xSSC/ 1% Tween 20 (Roche). Two subsequent 30-35 min incubation steps were performed with biotinylated anti-Avidin (Vector Laboratories) and avidin-FITC (Vector Laboratories) for biotin detection; and one subsequent 30-35 min incubation with Texas red (Jackson Immuno Laboratories) for the digoxigenin detection. Slides were mounted with an antifade solution with 100 ng/mL of 4'-6 diamino-2-phenylindole (DAPI). Slides were studied under a fluorescent microscope with an automated scanning platform (Axioplan 2-ZEISS) equipped wit the appropriate filter set. Meteafer software from Metasystems was used to search for the metaphases. Images were analyzed using the Isis software from Metasystems. At least 20 metaphases were analyzed for each slide.

Probes Used for Screening

After testing different probes, two BACs from the RPCI-11 collection located inside the inverted fragment were selected to study the inversion status: RP11-10A14 (D) and RP11-177H2 (H).

The two BACs are located 1.7 Mb apart inside the inverted region and do not contain any of the duplicated regions flanking the inversions (REPs containing the Olfactory Receptors). Since there is sequence data, fingerprinting data and FISH data for these two BACs, this BAC combination was selected as the standard combination to search for the inversion.

In some cases where the inversion status is difficult to define using the D and H probe combination, two different BACs were used to confirm the orientation of the fragment: RP11-148O21 (1) and RP11-496N3 (20).

These two BACs are also located inside the inverted fragment but are located ~3.4 Mb apart (FIG. 2B).

Genotyping Methods

Genotypes were obtained by PCR-based assays, either TAQ-man assay, or FP assay for single-nucleotide polymorphisms, and using fluorescently labeled primers for INDEL polymorphisms and microsatellite markers. Standard techniques for genotyping for the presence of SNPs and/or microsatellite markers can be used, such as fluorescent based techniques (Chen, X. *et al.*, 1999, *Genome Res.*, 9:492), PCR, LCR, Nested PCR and other techniques for nucleic acid amplification.

EXAMPLE 4

Markers with chromosomal location according to NCBI build 33, their primer sequence and amplimers. The SNPs are with chromosomal location according to NCBI Build 33 and 500 basepair sequence up-and downstream of the IUPAC coded annotation. Also see FIGS. 8A-C for a list of markers and FIG. 10 for a position map.

For SNPs

IUPAC codes, R=AG, Y=CT, S=GC, K=GT, W=AT, M=AC,

For Microsatellites and INDELs typed by measuring the length of the repeat using capillary electrophoresis, following PCR using labeled primers the allele number is reported as the offset from the smaller of the two alleles of CEPH sample 1347-02 (CEPH genomic repository); thus allele 0 serves as a (CEPH) reference allele.

```
>AF287957-1, chr8, pos 6609501 in NCBI build 33
Primer pair:
F  CTGGCTCTTCCTGCCCTAAT
```

R TTTCTGGTGGGCATGTATGT
length: 197

Amplimer:
CTGGCTCTTCCTGCCCTAATACCGGCTGCCCGTACGGGACTGCTCACCTCCTGCAGGG

AGCCGGACGTCTGTGGCGATCTCCCTCCCGCCATGACACCCCCTACCTGTCCTCCATC

ATATGGGacacacacacacacacacacacaccccctacgcacacccacacCCCACATGC

ACATCATACATGCCCACCAGAAA

>DG8S285 chr8, pos 6717625 in NCBI build 33
Primer pair:
F: TGGAAGGCCCTCTTTAACAGTA
R: GCCACCCTAACCCTACCAAG
length: 159
Amplimer:
TGGAAGGCCCTCTTTAACAGTAGGTATTTGAAGTGTTATAAAAAAAAAAAAAAGGTGA
ATTTTTCTTTTATTTCTCAGTTTGAAAGAACAGCTTTATTCTTGGTTATTCCTAATGT
CCACCTAGTCCTCTTTTACTTTTCTTGGTAGGGTTAGGGTGGC

>DG8S316, chr8, pos 7996504 in NCBI build 33
Primer pair:
F: CACATATTTGTAGGAACTCTCAAAGC
R: GCATTACACAACCTCTTTACCAG
length: 189
Amplimer:
CACATATTTGTAGGAACTCTCAAAGCGTTTTCCAATAAGAATTAAATTGCAAATGACA
ATTAAGTTTTTAAACCAGTCCCCAAAATCTTAATTTGATTGTAGTTACAAAAGAACTA
GTTCAAGTTCgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtCTGGTAAA
GAGGTTGTGTAATGC

>DG8S201, chr8, pos 8078430 in NCBI build 33
Primer pair:
F: AAACCATTTAACACAGGATAAACTCA
R: GGGTACACTTCCATCTGACCA
length: 185
Amplimer:
AAACCATTTAACACAGGATAAACTCATAGTTACATTAAAAGATAGGAAAATacacaca
cacacacacacacacacacacacataccacacaaacacacatacatgcacacacacac
acaTTTCGGTTACTAGTTGGTTTCAGTCAAGGATAAAAATTCTTAAATTGGTCAGATG
GAAGTGTACCC

>DG8S307, chr8, pos 8079177 in NCBI build 33

Primer pair:
F: GACGGATTTCAGAGTCACCAA
R: TGCAGAAGTCCTCTGTTTGC
length: 381
Amplimer:
GACGGATTTCAGAGTCACCAAGGATGGCCAATGATGtggtggttaagagcatgaacac
tggtgcttcacggcctgggttcgggtcctgactcaatgcttactggctgtgtgttttg
gaaaaggcccttaatctctctctgtttcagcttcccatctataaaatgtggataatga
caatacatacctcatgcagttattagaaagattcaatgagttattatttataaactgc
tcaaaacagcaccatgtacatagaaagtgctcgttaaatggatggatggatggatgga
tggatggatggatggatggatgggtgcatggatggatggatgaatagatcaatg
gatggatAAACAGGCAAACAGAGGACTTCTGCA

>DG8S332, chr8, pos 8133961 in NCBI build 33
Primer pair:
F: CCGATGGGTATTTGTTCCAC
R: GAGGAAAGGACACAGGGACA
length: 170
Amplimer:
CCGATGGGTATTTGTTCCACGTTTTCTATTTTAGTCAGTTCTACCTTTAGAGTTCTTT
acacacacacacacacacacacacacacacaGCATCTCACTTAATTTTATTCATCCTT
CAAAGTTCATCTTAGGTCATTTCTTCCCCTCCTTTGTCCCTGTGTCCTTTCCTC

>DG8S322, chr8, pos 8166275 in NCBI build 33
Primer pair:
F: TTTCTGAAACTCCATAAACTCATCA
R: GAACTCTACCAAGTTTGTCTTCTGG
length: 178
Amplimer:
TTTCTGAAACTCCATAAACTCATCAGATTATTTTTACTTTAAATGCTATAAACCTGAA
GTATTTCTTTACTTGacacacacacacacacacacacacacacactcatacacaTT
TCATACTTTTGCATCAAAGCTGGTCATAAAATTGGTACCAGAAGACAAACTTGGTAGA
GTTC

>DG8S324, chr8, pos 8238280 in NCBI build 33
Primer pair:
F: ACATCCTCTTCCAGCAGACA
R: TGGAAGCTGCTAAGGAGAACA
length: 373
Amplimer:
ACATCCTCTTCCAGCAGACACCCACAAAGTACTATTCAGTTTGCACTGTAACAAATGT
TATTTCTGGGCCTCAGTGAGATAATGGTAAGTGAATGTAATTCACTCTCATTAATATA
TTAAAATGAGTATGAATTTTAAATTAGAAGGAACAAGTCCATGGTCGAAGAATTGAAA
TTGGATTTATGTGATTTGACTTCGTAGTCATTTATCTACAATACTCATTGATACTAAT

TGCACAGTTTCCTCTTCACATTCCCACTGGGCAGCACgtgtgtgtgtgtgtgtgtgtg
tgtgtgtgtgtgcatgtgtTATGTATTTGAATTAAAAGACACTGAGAAGTAGCGCCTA
AAAATGTTCTCCTTAGCAGCTTCCA

>DG8S258, chr8, pos 8335265 in NCBI build 33, alias name DG8S265
Primer pair:
F: TCTTCCGCCCTGTGTCTATC
R: TCAAGCGGAAGATTTGTCCT
length: 257
Amplimer:
TCTTCCGCCCTGTGTCTATCTAGGTCAGgcttctcaaacctcaccatggcagatgcat
catttggagaccttgtgaaaatgtagactctgattccctaggtcaagggctgagattc
tgcatttctttcaaaatcccaggtgatgctgctgctgctgctgctgctgctgctgctg
ctgctgctgGTCTAGACCACATTTTCAGAAGTAAGGATTTAAACAATCAGCACCCAGG
GAGCTAGGACAAATCTTCCGCTTGA

>DG8S265, chr8 pos 8335265 in NCBI build 33, alias name DG8S258
Primer pair:
F: TCTTCCGCCCTGTGTCTATC
R: TCAAGCGGAAGATTTGTCCT
length: 257
Amplimer:
TCTTCCGCCCTGTGTCTATCTAGGTCAGgcttctcaaacctcaccatggcagatgcat
catttggagaccttgtgaaaatgtagactctgattccctaggtcaagggctgagattc
tgcatttctttcaaaatcccaggtgatgctgctgctgctgctgctgctgctgctgctg
ctgctgctgGTCTAGACCACATTTTCAGAAGTAAGGATTTAAACAATCAGCACCCAGG
GAGCTAGGACAAATCTTCCGCTTGA

>DG8S303, chr8, pos 8377219 in NCBI build 33
Primer pair:
F: GAAAGAAGCTGCAAACAGCA
R: GTTGATCCAGAGGTCGGTGT
length: 366
Amplimer:
GAAAGAAGCTGCAAACAGCAACCTGGTCTTTGACTGCACAATAATCCTCTAAGGTTCAG
ATCGTCTCAACCAGAGTTAAATTCTAACagagagagagagagagagagaacgagaga
gagagagagagaTTGATCTGGATTCAGGCTTCCTAGATGCAGTCTATCCAACTCAGGCA
GCAGTGAACGAGGAATACAGGCTCTTTCCCACATGTTTGGAATCCTGGCCCTGAGCCCT
GAGCTGTGCATTCCATTTATCCTCTTTGTGGGCTGAACAGATGAAATTGCTTTAGCTAA
AGGAAGTGGCACGAATTTACTTATTTATTAGATGTGCAGGATACATCCATCACACCGAC
CTCTGGATCAAC

>DG8S269, chr8, pos 8547384 in NCBI build 33
Primer pair:
F: CCACTTCCAATGCAGACCTT
R: TGCATGTATATAATGAGTAGGGAGAGA
length: 412
Amplimer:
CCACTTCCAATGCAGACCTTGTTCTATAAAGAATATCTAGCACTTTCACATGTTTCTG
AAGGAAGTGTATTATTTGTAGCCCCTTTTTGGAGAAAAATTattctgcttcaaggtat
ttattctacggatatactaacatgTgtcaaagaatacaatctcgagtctttagtgttg
tttctggagtaaaatattgaaaataatcaaaatgctcatcaatagaaggctggctaaa
taaagtcggcTtatataatggaatatcacgtggccagtaaaaaagaatcaaacagctc
tctatatatcaatattttgcagtgtatatattaaacttttaaaaagcatacaaaacac
tgtttctattctactaccattttgGGGTGGGAGACTTTCTCTCCCTACTCATTATATA
CATGCA

>DG8S232, chr8, pos 8602797 in NCBI build 33
Primer pair:
F: TGCCGGTATAGGTGTGACTG
R: TGTTTCTTGCTGATTTCTTCCA
length: 293
Amplimer:
TGCCGGTATAGGTGTGACTGAACAATACATCCATTGGTAGACTACTATGCTATATTTG
TAGGATATACTATAACATTCTacacacacacacacacacacacacacacacacacaca
cacacaTAATAATCTTCTATAACAGGGTTCTAACTGTTCatatggaggcatctcaaaa
atatattttgaagtgatcaaatgcgaggtgcagaacaaggagtacagcatgATCTCAT
TCCTGTTAAAATATATGCAAATACATGCTTTATTTTCCCTGGAAGAAATCAGCAAGAA
ACA

>DG8S249, chr8, pos 8612390 in NCBI build 33
Primer pair:
F: TCACCTCTTCACGGACAAAG
R: TCTTAAGTCCATCTCTGCACAAG
length: 309
Amplimer:
TCACCTCTTCACGGACAAAGGGGAATAACCTCAGAGTATGACATAAAATATCCACTAA
ATAAAAAATACTggttgggtatggtggctcacgcctctaatcccaacattttgggagg
ctgagtggggaggaccatttgaggccaggagatcaagaccagcttgggcaacataaaa
aggccctatctctatttcacaaacacacacacacacacacacacacacacacacacac

acacaaaaagaaaaaaaaaaTTAAAGAAAAAATACTTTAGGAAATTCTAAACTACTTG
TGCAGAGATGGACTTAAGA

>DG8S298, chr8, pos 8623920 in NCBI build 33
Primer pair:
F: TTCAGATGGCTCAGGGTAGC
R: AGAAGCTGCAGGATGGAGAA
length: 265
Amplimer:
TTCAGATGGCTCAGGGTAGCCCCACCCACACTCCCTCCCAGAGACAGTCAATTTTACA
ACAAATATTCTGAGttatctaggctgacccttttttttcccccacagaggaggaaatgg
gctcaaagtaagtgacttctcaatcagccatcaaagtagagtagaggcaggactGCTA
ACTCCCCGTGTGGAATGTATTCCCCTGTGATCATCACCTGTACTCACACTGTTCTTGA
GCCAGACCCCAAATTCTCCATCCTGCAGCTTCT

>D8S351, chr8, pos 8647934 in NCBI build 33
Primer pair:
F: AGCCAGAAATTGAGGAAGTG
R: CTGCAAGCTCTTTCAGTTGA
length: 109
Amplimer:
AGCCAGAAATTGAGGAAGTGCTCAAACACACACACACACACACACACACACACACACA
CACAAAGGAGTATGTCATAGGTACAGAGAAGTCAACTGAAAGAGCTTGCAG

>D8S1825, chr8, pos 8795901 in NCBI build 33
Primer pair:
F: GACGGATTTCAGAGTCACCAA
R: TGCAGAAGTCCTCTGTTTGC
length: 381
Amplimer:
GACGGATTTCAGAGTCACCAAGGATGGCCAATGATGtggtggttaagagcatgaacac
tggtgcttcacggcctgggttcgggtcctgactcaatgcttactggctgtgtgttttg
gaaaaggcccttaatctctctctgtttcagcttcccatctataaaatgtggataatga
caatacatacctcatgcagttattagaaagattcaatgagttattatttataaactgc
tcaaaacagcaccatgtacatagaaagtgctcgttaaatggatggatggatggatgga
tggatggatggatggatggatgggtgcatggatggatggatgaatagatcaatg
gatggatAAACAGGCAAACAGAGGACTTCTGCA

>SG08S138, chr8, pos 8799779 in NCBI build 33, alias
name,rs920974
CTCAAAAACCAAAGGTGTGATGAAGGTGCTACAGTTTGAACTCTTTAAAGGAAGGCAT
CGGCCATATAGAGTGAGCCACAGGGGAGGACTTCTCCCGTTTCCCTGTAGAATGGGTT
ACCAAGTTAAAGGAGTCAATTATCCCGTCCTATCTGGAGAAAGCATTCCTCAGATGAA
TAAACTGGAAACGGAAAACTGGAGAAGGTGTTTTTATTTCTTTTCGTAATTAGGACAT

CATTTACAAGACTTATATTTCTTGGATGTTCCCCAAATTTTTCACATAGAGCTGGCAT
TACTAGAAACTTAAATACTTGTTGCTTTTAATTATATTGAATTCCACCGTGGGAGCTT
AAAGGCTAGGCATTTTGTGATGGGTGTGCATTCTACTCCCAAATGTAATAACTAGAAT
AGAAATTCCAGAAAAGGAAAAGTATTTATCAAACACTGAAGCTGCTTTGAGAAATGGC
TTTGTCAAGTTAACTGGTTATCATTAGATTTATTAC
[R]
GTGGTTAGGAAAAACTGACCTCGTAGATGTCTGTCTATAACAATGCAATCATCTGCTT
AGAATAATGCCCCGCGTTAGACAGCTGTAAACACAAGAACTTTCCCTTGCGAGTTCAA
TAATCTTAGCAACAGTTCTCTTTCCAAACAGGCCAAGAAAGATATGTTGCTTTGGGAA
ACTGGAAATCAACAGACCAAAACAGCCAGAAGAAATGGGTGGAGAGAAGATAGAGCCC
GTTCACTCTGCAGTCTCCGCAGGGGTACAGAGTGATGGCAGCCATGGGTGCCCTTGTA
AGTCTCTGTCCCAGCTCCCAACCCTGCCACCTGGGGCCACCACCATGATTCCCTGCCC
GGCCCTGCACACATGGGCTGCAAAAATGCTGAGGAAAAAGGAGATTTCAAACTAATTC
ATCCCCAAGTTACAAACGTGGTTCATGGAGCTTTAGtaaaaattatttttaaattttt
aCTTTGATCCACAGACATGCGACTTGAACCAGATTC

>SG08S6, chr8, pos 8801073 in NCBI build 33, alias name,rs2028806
tgcattccagcctgggtgacagagcaagaccctgtcACACACGTACACACACGCAAAA
ATGACAGAGAGGCAGAATTCTCCTAAGTGGAAATGAAATACAGAATACCATGATTTAG
TTTTCCTGTAGTTCTTTCCCTAACGTTTGACAATAGCTTTCCTTTTGGGTGATCAGTG
TCCTTTGGTTTTACCTCATAGCCCTGTGAGGTTGCCGTGTTGAGTCTTGTTTTCATAC
CACATTGACGGTCCTTTCTAGTGGCCTGAAGGTTTTTGTTATTAttttgaaaagcttt
attgatatataattcacataccatacagttcactcatttgaagtggacatttcaatat
ttggaagcctattcacagcatatgcgcaaccattaccacagccaattttaggataatt
tTTTCTTTCTGTTTTTTACTGTggggttttgcagtgaaaaccagaaaacctgctagac
aaattccaaaagagctgtaacacGCGatttcagaac
[R]
tttaatcacctcaagaagaaacctgaaggatccttccgtcgccgcctctatctctgtc
ccctccagccctcagaaacaactaatctatgttctttctttaAAAAAAAAAAATCTTT
GAAGCCTTCATAAATCAGCCCTTTGATTTAAATCTCCATCTCACTCCGCCACTATTTT
TGATCAATTCTTCACCAGAGCTTCATCTTGACATGTGCTCTGCCACAGTGCTAAGGAA
CAGAGTGACCCCCCACCCCACTCCCGACAGAAGCAGCCCCAGAGAGAGAAGCAGAGGG
TCAGGGTCAGGGTCAGCACCGAGTGTGCTCGGGTGAACTGCAAGTCTTGACTTAGTCT
TGAGGACCTCCTCAGTCTTGCACCCCTTCCTTCAGCAACACCTGCCGGGATGCGTCTT
TCGGCCTCCTCTGAAATACAAAAACATTTTGTGGTCTAGCTGCTCACTGTATTTTCAC
TCTGTGGTTTTCTTTAATTTACACCCCTCTTCTACT

>DG00AAHBI, chr8, pos 8889014 in NCBI build 33, alias name,rs330938
TACACATGAAAGTTGACTTGGCTGAATATAAAATGCTTTTAGATGCTTCTCCATTGTT
TTCTGACTGTAGTAGTACAAAGAGGTCAGAAGTCAGTCTGGTATTTGTTCTTCCATCA
ACAACTTGTTTGGGATTGGGGGTGGTATTTCCTGTGTGGATAACTTGCAGcacttcct

cttcttctttttttttttggtctttgtaactaaaaaatgtggtcaatatgtgtctag
gtgtgggtgttttaaaattgattttacctggaatttgtgagcccagtcaatctatata
ctccagtctttttccagcctgaaaatgttttcttcaataaagtcattatcacttAttt
ctgttgttctggtttcttgattagtaatactgttaagtcttaaactgaattcccattg
tttatatttatcagaatctatcacttttcttagttaactatttattttcacttatcat
gtctaactctatgctcttttcctgtaaaagacctct
[Y]
aaggttcacctccaaatcaacgtttccattttctacactgtcaattttgcttctttcc
acctccatgagggatttaattcttggattgcatttttttttgacatccattcttatc
gcatctctctttgtatcttgtcttcctaacttttcatcttatctctgtgtgtggtttt
ctgtaattcatagaccatgtcttcctgcaatccaagatgtttttaaaatttttcttttg
tttcctgTAGTAAAACTATTTCACGGGGAAATTTGGCAAACTGGTGATGCCCTTGGAA
TAGTCACCATACACTTGATAGTTTACAAATGTGTCAGCATGTAAATTTGTGTTTCATT
TTCATATACCCCAACATCTTATAATGGAGGGAAAGGCAAGTCTTTGTTTTCCAAGGTC
TTGGCTCTTTTAGCCGCAAAGTGGTGCTAACAGCTCCTTCATGTTCCAGGAGCCTCTG
GAGAAACTGCTTCCATAAAGTGTTTGGGAATTCTGG

>D8S1469, chr8, pos 8960671 in NCBI build 33
Primer pair:
F: GCTTTAGAAGGCGGAGGTAG
R: GAGGGGGTTAAAGGTGTCAT
length: 221
Amplimer:
GCTTTAGAAGGCGGAGGTAGTAGGTAGGTAGATAGGTAGATGATAGATAGATAGATAG
ATAGATAGATAGATAGATAGATAGATACAGATATACAGATAGAGTTGTATACATNAAA
TATATATTATGNAAATATATACATAAGAAGGATGACATTAACAGGCATTTTCTAGTAA
ATTAAGAGTTAGCCAGGAAATGTAACCATGACACCTTTAACCCCCTC

>DG00AAHBH, chr8, pos 9035511 in NCBI build 33, alias
name,rs330062
GAAGAACAGAGGCGACTCACAGTTTCCGTGATAATGATAAGCTGCAGACGACTATTTA
GAGCATCCCAACATTTATTTCAAAGTAAAGACAGTAGAAAACAACTGGACTGCAAGAT
GGGAGTCTTGGTCactcactgtgtgatattaacagagtcactcgacctccttggactc
agtttcttcttgtctaaaatggggctgttgtcctcactcagctctaaaggctcctcTT
AAAGCAAAAGTGATGGTTCTTGGAATTTCTTTTATTTCTCCAGTGAGAATCACTTCAA
TCTTCAGGCAAGATACCTGCCTGTCTCCTGCCCCTCTCTCCCATTCTGTCCCGGATAT
TGTGAAGCTACTTCTTCAGTTTCATGAACCTGGATTTTGGCCAAACCCTTGATCATTC
ATCTTAGAAGCTAGATTTCCTTTTCGAAGCCACAACTCTGGGAAAGGTCTTCACAGCC
AGTTCCTGATGTTGCTGAGCTGATCTTGTCCATTCT

[S]
AGTCAAGGTAGGATGACAGCTCCCCGTGAGAAAAAAAAATAGGTGTTGCATAAGAGAA
CATCTTGGCTATTTATGAAAGATTTTCTATGCTTCTGTTTTAAGTTTGTTTTTCAATT
ACAAAAGGGACTCATTCTTTTGTATAAAATTTGGAAAGCTAAGTTAAGTTTAGAGAAG
AGGGTAAAATCATTCTTAATCCCATAATTCTACCATGGAGAAATTTTGTTAGTATTTT
GGTGTATTCTCAATTTCCTCtgcagtttttacattgttgaaatcatgctatttatac
tatttcatcctttcttcccactgaaaattgtatgataagcatttcctcatgtcactga
agtcactgataagtaatattttaatagcaccataatattttattttgtgggttttgtc
ctaaggttgaacagataggttgtttctagttttatttttttaaaaatattattagcaa
tgctgagatgaacatttgtgtgtatatatctctgga

>D8S503, chr8, pos 9104198 in NCBI build 33
Primer pair:
F: GACCATGATTAAGCAAAACAAA
R: TCGCTCAGAAACAAACCAA
length: 222
Amplimer:
GACCATGATTAAGCAAAACAAATAACACAAANCAAAAATCTTCCTATTTCCCAGAGTC
CTGGGTTTATCACAAATGCTATTAAGGTTACGAGTTTTGTCCTTTGATAAAAGANGAN
CCACGTTTGGAAATTGTCATTACCCTTTATTTTTCAACACACACACACACACACAC
ACACACACACACACACACACACACACACTCCTACATTGGTTTGTTTCTGA

>DG00AAHBG, chr8, pos 9132391 in NCBI build 33, alias
name,rs898137
CAAGGAATTGCTACAGCACATGCTGTTGGGGTGCCTGGTGTGGGGCTCCTAGAGGGCT
CCTTTAAGCCTGCCTCTCCCTCTCTGGTAGTTGTAACTAGAAAGGGTATTCAGGAAAA
AACACAAATTTCTCTCTAGGTCTTCTCAGCCTCCTTACCAGGCAGCAAGAGCTGAGAG
AACTTGGAGTAGAATATTCTAAACCTTGCTCCTGTATCTGCTTTCTTGCCTTAAGAGA
AAAATCTTTTCCCCCAGATTCTGCTGTCTTTACACTCATTCTCATCTTACCGATCTCT
TTAAAATTTCAGTCATTCTCGGAGACcatagggcagaacgcaaagaacataacatagg
agtcaaatggagccgaacacttcagtcactcacgtgatggctgtgtgtccttgggtaa
gttctgtagcttctctgagccccaacttccttatAACATCATTGAAGTCCTAACAGCT
GTGAGAATGACACATGATGCCTGCAAATTTCATAAA
[W]
CAGTGCTTGGTGGTTAGTAGTTGGTTTTGAAAAGGTTATGCTAAAATTCCAGGGTGAT
ACTTTTCTAGGTAGTCCCTTTTTGCAGGTAGCTTTCAGAGGTAAAACCTCAGACCCCA
ACACGGTCCACCTCTGCAttttttttttttttttttgacatggagtctcgctctgtg
cccaggctggagtgcagtggcgtgatgtcggctcactgcaagctccgcatcccgggtt
cacgccattctcctgcctcagcctcccgagtagctgggactagaggctcaggacacca
cgctcggctaatttttgtatttttttagtagagaccgggtttcaccgtgttagccagg
atggtctcgatcttctaacctcgtgatccgtccgcctcggcctccctaagtgctggga
ttacaggcgtgagccaccgcgcccggcctttttgtttgcttgtttttgagatggttt
cttggtctgttgcccagactctagtgcagtggcacg

>DG8S277, chr8, pos 9205638 in NCBI build 33
Primer pair:
F: GTCCTCTGGGTGTTTGCAGT
R: CAGGCTCTGCTCTCCTTAGC
length: 259
Amplimer:
GTCCTCTGGGTGTTTGCAGTGCTGAGTGCATTGGGGTTtgtgtgtgtgtgtgtgtgtg
tgtgtgtgtgtgtgagagagagagagagacagagagagggagagagGAGCACAGTAGCTT
GTGCAAAGACCTCCTTTGCTATAGAAGCCTGATTCCAAACCTGTCTTCTTTCCCAGAA
GTAATTACAATACACATTGCTGCTTCTCTTCAATGTGCCTGTGTTCTGGAAGCTGTGT
GTCTCCAGCTAAGGAGAGCAGAGCCTG

>DG8S297, chr8, pos 9226230 in NCBI build 33
Primer pair:
F: CAAATCAATATACCACTTCAGGACT
R: GCAGTAGGCACATGGCAAAT
length: 168Amplimer:
CAAATCAATATACCACTTCAGGACTGGgtgtgtgtgtgtgtgtgtgtgtgtgtgtg
tTTcttctcttccctccccctcctcccctttcctcctcctccttctTTAGACAAGTACTA
TGTTTTAAGATTTAGGTATATAATTCTACTTAATTTGCCATGTGCCTACTGC

>D8S516, chr8, pos 9280975 in NCBI build 33
Primer pair:
F: GAGAATGCTTGACCCCAAAAAATC
R: CCTAAGAGAGTGCTATGTGCTCCC
length: 162
Amplimer:
GAGAATGCTTGACCCCAAAAAATCAAGATCAAAGATCAGCCTGGGCAACAAAGTGAGA
CCCTGTCTACACACACACACACACACACACACACACACACACACACAGACACACACAAAG
TATACCCAAGTACTACAAAAATGGGAGCACATAGCACTCTCTTAGG

>DG8S177, chr8, pos 9315167 in NCBI build 33
Primer pair:
F: CCCAGATAAGATCTTGGTTCAG
R: ACCACGGTGACCCTCAATTA
length: 253
Amplimer:
CCCAGATAAGATCTTGGTTCAGAAAAAAATGTTAAAACAGCCAGtattatagaattta
tatttaaattataatatagtctatataatttatatCTAAAACgtgtgtgtgtgtgtgt
gtgtgtgtgtgtatgAAGTTAGGTGGTAAATAATCCAATTGACTTGTTAAGTTTTGGG
CTAATAATATGCAGAGTTATCAGCAATAGGGAAGACTGAAGACTTTGCTCCTCTTAGA
GTAATTGAGGGTCACCGTGGT

>DG8S137, chr8, pos 9503869 in NCBI build 33

Primer pair:
F: CTTCAGATTGGAAAGTCAGGAGA
R: AAAGCTCTCAGCAAGGACTTTA
length: 240
Amplimer:
CTTCAGATTGGAAAGTCAGGAGAGATTTTCAATCTTCGTTTCTTCCCACTAAATGTAC
TAAAATAGAAACTGTTGTTGTTTTTAACTAAAATCAGAGCAGACTGGAATTACGGAAA
AGAATATTATGAATGGTTCtatatatatatatatatatatatatatatatatatatat
atatatgtaGACAGAACTTAACATTTATGTTTTTTTGTTATTTTTAAAGTCCTTGCTG
AGAGCTTT

>DG8S182, chr8, pos 9516392 in NCBI build 33
Primer pair:
F: GATCTTGGCTGGCAGAAGAA
R: GCTCCGAGAAGAACATATGGA
length: 289
Amplimer:
GATCTTGGCTGGCAGAAGAATAGAATCAAGAAAATTTTCTCAAAGGAAGAAGAGAATT
GCACTGAAGCTTTGGGAATAAAAAGAAGTTAGCCACGCAAAGATAGAGTCTTCCAGGT
GAAGGAAAGGCATATACAAAGGAATGGCAGTAAGAAAGAACAAATCATGTTCAAGAAG
CTGGAAGGAGTTGGCCGTGGCTGAGCGTTGGGTGAGATGACAGTGGAGAGGTGAAGAG
GCCGACAGNGGGGGCAGGGCCAGAAGCAGAGAGGGTTCCATATGTTCTTCTCGGAGC

>DG8S262, chr8, pos 9560368 in NCBI build 33
Primer pair:
F: TGCATATGTCTGGCCTGTCT
R: TTTCTTCCTGGCTTTCCTTG
length: 350
Amplimer:
TGCATATGTCTGGCCTGTCTCCTGGCACCTCTGCTTTCTCTTCATGAAGCACCCAGGT
AACCCATTATCCAGAGCTCTTACTAATTCTGTTCAGTGTTTGTTTCTTGCTGCTGGGG
CAGGAGGTGGAGAACAAAGGGAATGAGGGAACATTGAGAAATTTCTCTTCATTGTGAC
CAGCTAGGGCAAATTGTCCTTGGTCTTCTAACCCAGCAGCAAGTATTCATTGCGAAAa
cacacacacacacacacacacacacacacacacacacacacacacgcaTGCCATTTAT
GCAAAACACATTAGTGAGGGTATTTTTCCTCTTTAAGCACCAAGGAAAGCCAGGAAGA
AA

>DG8S136, chr8, pos 9647411 in NCBI build 33
Primer pair:
F: GCACTCACAGCTTTGCAAGTA
R: TCCCTGAGTGGAGAATCTGG
length: 138
Amplimer:

GCACTCACAGCTTTGCAAGTATTGCTGCTCAGTGAAAATGTAAGTGCCATACATGTGT
ACCATcacacacacacacacacacacacacacacacacacacacacacCCCCTTCTAG
ACCCAGATTCTCCACTCAGGGA

>DG8S179, chr8, pos 9697364 in NCBI build 33
Primer pair:
F: AGGATCAGCATGGAATTTGG
R: CCCATCCGTAAATGTTGC
length: 383
Amplimer:
AGGATCAGCATGGAATTTGGCCAAAACAGATATAAGTCAGATTTAGGTCTCAAGCATT
GAGGCCTGATGCAGCAtttatttatttatttagagacagggtctctgtcgcaagactg
gagtgcactgctgcaacctcagttcactgcaatctcagccttccgggctcaagctatt
ctcccacctcagcctcctgaatagcaggggctacaggtatgcaccaccacacccggct
aatttttttgtagttttagtagaggcagagttttgccacattgcccaggctggtcttga
actcctgagctcNcacttgcctcagcctcccaaagtgctgggattacaggtatgagcc
actgtacctggccTGATGCAACATTTACGGATGGG

>DG8S134, chr8, pos 9774278 in NCBI build 33
Primer pair:
F: TCCTGAGTCCAGGCTATTTCA
R: GCCTCCAGAGTACATGGACAG
length: 303
Amplimer:
TCCTGAGTCCAGGCTATTTCATAAGTGAATTATGAAACTATTAttttttttctgaattg
aaaaataaatgattataaaagaaaaaattaagaaaaaagtgaaagttatctatatttc
taccatcagagacaactgctgttaacagcctggatatattctttcaggcttttttctat
TCTCTTTTacacacacacacacacacacacacGTGTGTGCATGCACACTTAATAAGAC
CTAAAATAACTGCATTTTGTTAAAGTTACATGTTGAAGGAAAAAAGTCTACTGTCCAT
GTACTCTGGAGGC

>SG08S93, chr8, pos 9794410 in NCBI build 33, alias
name,rs2898232
CTAGATAACTTAAAAAATGTTTTTTTTCTTCAGGCTTATGCTCATACTAACAAGCTCT
GTCGAATTATTTCAATGTGCGGAATAAAAGGCAAGAATTATTTTCTGGTGCAGTTTAG
ACCTTGGATGAGTAGGGTTATGCAGCTGTTTGCTGCAGTAGTTTTGGGGAGACACACA
CCTGACTTAAGCTATGTGAATTTGGATATGAAGTTCCAAGTGTAAGATATGAACCAAA
GGATTTCTCTTAACGTAACGATGGAACTCAAGCCTGAACTATTTTTGTTCATTAACAA
CCTGGCAGTTATTTTTTCAGAATAAGGAGATTTATGAAAGAGCTGAAGTCTGGGCTTC
ATTTTGCGTGTACATTTGCTTCCGCTGTTGCCGGATGGTTGGTAAAGGAAATTGATAG
AGTTTTTAAAGTGAGGACTGTATTGTTTACTTTATGTGTTGTTTTAAAGTAGGAAGGA
ACACAGTCGCCCTGCTATCAGCCTCTGGTTTCTTGT
[S]

CCAGTGGCGCTAAGAGTCAACTCTTCTGCCTGACAGTGCCTGCTCCTACCGTGCCTGT
GCTGAGATAGCTCCTCCTGGCTTCAGGGCCTTTATGGCTGAAACTTCAattatatata
taaaatatataaaataattattaatataacttaatataataatatataataACttttt
tgagacagagtcttgctctgtcggccaggctggagtgcagtggcatgatctcggctca
ctgcaccctccgtctcccggattcaagcgattctccatacctcagcctcttgagtagc
tgggattacaggcgcccagcagggtttccccatgttggccaggctggtcttgaactcc
tgacctcaggagatccacctgccttggcctcccagagtgctgggattacaggcgtgag
cccctctgcccggccAACTTTGTATTTTTGCTCAAAGTTTGATCTGTACATTTTGAAT
CATTTTTATCCTTTTTCCAATTTCCCAACTAACCAA

>SG08S112, chr8, pos 9804270 in NCBI build 33, alias name,rs3735823
GTTACATGATGACCATTAGTTAAATGAACTAAAGAATGATTGAGCTTATATTCTGTAG
TATCGTATTTGGAAGTTGTGTGTTCAATAAAACTCTTTTAGTATAATTCAGGCCAATA
GGTATTAATATTAATGAATGTCAGTAAATGGAAGCTATGTTTTTACCTTCTAGCACAA
ACATCTTTAGAAATTTTATTACGACTGTGTATGTGTGTCCAGTGGCTGACTTTCCAAG
CAGTTATTAGAGGAGATCTGAGTTTTTAGCTTCTGCATTATGATTCATGTTGAATATT
TATGGAAGAGAAGTGTTTCTACAAATATGTAAAAATATTGGTGAGTGAAAGAAATGGC
TCCCAGTATGACAGAAGAAAATATCCTAAAGAGATCCACAGTTATCTGCAGTTTCCCC
AAGGTTGTGTTTACATAAAAAAGACATTGTTTTATGTTCTAGCATCAAGAGATGATTT
TACGATATAACAAGTTCCACAAAGAACTCTCGTAAG
[R]
TGGTTCTCAGTCCCGGCATAACTGCTACGGAGATCACAGAGCAATATTATTCTCTGGA
TTTATTGGGTTTGCTGCATTCTGTTAGCATCATTCATATTTTTCTCCCATGGGTACCA
CTTTCCTCTCTTTTCCTAATACCAAGATATGGAGACTCATTTATGCCGTGGAGTGTGA
TGCTGGGAAATGAATGCTTGCTTATTACCTCTCTCCACAGGACCTTTCATGACCATAC
GTCGATGTCTGCCGCCTCAGTATAAATAGGCACATTCagaaatgtgttctctagtgaa
gggcatgttggcttggtggaaagcacagggacttcacgtctggactgcgagtcagagc
tgtgcgtcatgtgcttactggctgtgtgaccttggataaatttgcctcagttttctca
tttgtaaaacagacagtcgctatttctgggaatagatgagataataaggaaagaacct
agaatggtacctggcTCCTGCCAGTTGCACAGAATG

>DG8S138, chr8, pos 9815189 in NCBI build 33
Primer pair:
F: TGGCGGTTGTTATTAATACGTG
R: TCCATTCTCATTCTCATTCTCA
length: 299
Amplimer:
TGGCGGTTGTTATTAATACGTGATTTCACTTTTCATTTATTTCATTTTTATGTCCATT
GTGgcttctaacctcatatttcacacatagcaggtactcagtaaatacttaataaatc
aatgaatGCAAGTAATGACTATGTATATACTagtggagaaggaaggaggggagggaaa
ggagaggagaggcgaagagaggTGGGCCAGGCAGAggagagaagagagggagggagag
ggagagagagagggagagggagagggagagggagagagagGAGAATGAGAATGAGAAT
GAGAATGGA

>SG08S15, chr8, pos 9851027 in NCBI build 33, alias name,rs2062331
TTGTAGGACTTTTAGAAAACATGGGGTTGTGCCTTTGGCCACACGCATGCTTGTGGAT
CTACAAGAACAGCGGTCCTGTAACTCTTCAGGGAAGGGGCACCACATATCTGTCCTGT
CACCATGGCAAAGCTGGAAGGGTCTGCAGAGCTACCCAGCATGCTGCTGGTGTTGTTG
TAACCAAGCAGAGGGCAAGATTCTCGCCATGAGAATTGATGTACATGTCTAGCATGTG
AAGCATCCTAAGGGCTGAGGTGGGTTCCTGAAACCTGTGGAGGAAAATGCTCAGTGCA
AGAAGCCAAAGAAAAAGGCACCAGGCTCAGCGGGAGCACCCGCCTGGAGAAGCATACT
TTGTGAGGATCAGCAGAAAGGAGCTGAGTGTGGAAGCTGTCCCCAAGTCATGGCACAA
AAGTATTCAAAAGAAAGGATTTCTGGATTGTTTTTTAAAAAACAAAACTGTGATGTAA
ATGATGAATTGTGCTCTGTGGTCTGATTAGGAATGT
[R]
AGTGGATCCAGAGTACAGTGGGGCTGAGGCAGTGGAAGTATTTTTTTGTGttttttttt
tttaacttttaggtcagggatacgtgtgcatgtttgtttaatgggtaaacttgtgtca
cgggggttcgttgtacagattattttgtcacccggataccaagcctagcaccccaata
gttatttttttctgctcttgtccttcctcctgccctctacactcaaggaggccccagtg
tcttttgttcccatctttgtgtccatgtgttcacatcatttagctcccacttctaagt
aaaaacatgaggtatttggtttcctgttcctgtgttagtttgctaaggataatatccg
ccagctccatccatgttgctgcgaaagacatgatgtcgttctttttttatggtggcata
gtactccatggtgtatatgtaccacattttcttttttacattctgtcattgggcattag
gttgattctacatctttgctattgtgaatagtgctg

>DG8S128, chr8, pos 9943010 in NCBI build 33
Primer pair:
F: TCAAAGGGAAGTGTCTTGGTG
R: CCCTCCAGAGTTCACAGAATG
length: 137
Amplimer:
TCAAAGGGAAGTGTCTTGGTGTCTCACTGGCACATATCCAGCATGATGTTGGTAAATA
ACCGAGTCCCGGTGTGGCGTATTTCTCCCTGAATCTTGACTGANAAACTACTGAAGCC
CATTCTGTGAACTCTGGAGGG

>SG08S100, chr8, pos 9961132 in NCBI build 33, alias name,rs2975734
GTGATACTGATGACAGTGGTCTGAAAACTGGCCTTTGGAAGTCATAGACACAATGAAT
TTACCTGTCACCACCACCACCTCCCCTAGGAACTTCTGAAGGACATCTACATTCCGTA
GAAATAAAGTTTTAAATTGAAGGAAAAAAATATTCAAACTTACATCATGACTTAAGCA
CCTAAGAGACTTAAAGAACATATCAAAATTACAACTGTGTCACTGAATCAAATTTACA
TTTTTGACACAATCATTACAAAATCATTACTTGGTAAGAATTTTCCAATAGTCCTACT
GGATTGTTTTTATTTAGAATTACCTTAAGATTCCTGCATTTCTACTCACAATTTTAAT
CTGTCATTACTCATGAATATCTGTGTCTATGAGATTTTTTATTATGAGATTTTAGTTT

CCCTTAAGATTTGGGTTCTCATATGAAATCTTCAGGAAGAACCTTAAAGAAAGTTCAA
ATTTTCATAAAGCCCTTTTCCAAACACATTGACACT
[S]
CAAATTTTGACCTGACTGGTAAAGATCTGTGATTGTGATTGTTCAAATGTGATTCTCT
AAAAATACCTAAGAGGCCGACCACTACATCTTCCGCACTCATGAAAGGCAGTTTTCCA
GATCTGACATGTCCTATGGGTTCACTACATAAATTGGCTAGGGCAAGTTCTACTAACT
AGTACACTCCATTCTCTTGCTAACTAGCACACTCCTGTTAACTAGAATGCCCCACTCT
CCACCTCTGCCTACTAAGGGTACCACTGAATAACAAACCCTCCAACAACAGATGGGGT
AGGAAGAGCAGTCTGTCTTGTCAGAGTGGAAACCAACAGGGAGGCTGGGCTCCCATTA
GAACATGTGCAGTTACCGCATGTTCCTTCAGTGTCTTATCCAAATGCTCCCTCTCTTC
CAGCTCTTTCCCCTGCTTTTAGACTTCACTCAGAACACAGCCACGTACACAACAATTT
CCAGGGCAGCCTCCACCCCTGGGATCCTAGAAAGTT

>SG08S39, chr8, pos 9971559 in NCBI build 33, alias name,rs2272597
tgtttgcctaataacagtgcattgaaatatatgtttgttttgtgtggtttttttgcat
cagttttgttttataacaaaagGCTAAaaataagtatttaaagaaaatagtgcatact
atattttatttgctgatattcataatgatcaccagattattgaaatttatgagtaatt
ttgctataaataagcctgttttctttgtttaaACACACACACACACATTTTCACACTC
ACACCTTCAAAGCCACATAATAGAATGTTTAGCTTAAACCTGCAGCCGCTAGTTGAAA
TGTTGCTTCATGGAGTTTTATCCTCCTAACAACCTGTGTCCTAAGTCACATTCCTCTC
CAGAAATGTGGACATTGACCATATTCCAGTCCCTGAGACGCTGTTTCAGCCACACGTG
GCACCCCAGACCCTTGCCCACCTGCATCCTGGTCATTCATCCTCCTCCTCATGGGGTC
ATTTCTTGATCCCTATTAAGCATTAAAAGGGGATTA
[M]
ATATCTCTCTACTTGCAGCTAATGTTTTGCTTGGTTTGGCCAAGAACATTTTAAGTTT
TAAAAACCTGGGGCTATTGGAGTGGGACCATGGGCAAAGGTCAGGACAGGCTAGCTAC
TAAAATGGCCTGCCACGGACCTTGTACGTGAAGGTTGAAGGATTCTGGTGCTCTCTGG
TGCCATCGCTGTTAGTCGTTGTGCAGCACAGAAATATTTTATTCAACAAACTCTGCAG
ACTCCTGAACTTTAGGGGTGGGCTGCCTTCTGCCTGGTGCTCTGCACAGATCCTGGAG
CTCTCGTGGTCATTTATGTGCAGTGAAGCTGCTCCACTCACCTACAGCTTGTCCTTTT
CCAGAGAATCCCTATCATCCTCCCCTCATCCCAAGGAATGCAACAAAGGAAAATTAAT
AGTGAATGCTTTTGCCGGAGACCTGTGGATACTTAATTTTTATAGATACTCAATAAAT
ATTTATTTATATTCACTAGCAGCAAGCAATTCACTT

>D8S1721, chr8, pos 10011582 in NCBI build 33
Primer pair:
F: GACTTTCCTAAAAGCCCAGC
R: GCATCTTGCATGGTGTATTG

length: 170
Amplimer:
GACTTTCCTAAAAGCCCAGCCAGTTCAGATGATAGGTGCAGACACATCATATTGCATA
TATTCACATTACACACACACACACACACACACACACACACACACTCTCACCCTTCTCTTT
GCTGGGGAAAGGTTTGTTGCAGAAGTTACCATTCCAATACACCATGCAAGATGC

>D8S542, chr8, pos 10028442 in NCBI build 33
Primer pair:
F: AATCACCTANACTACTGCCA
R: ATCTGATGGGGAGTTATGTATTC
length: 241
Amplimer:
AATCACCTATACTACTGCCACATAAGCACTATCAATAAATTTTATCAATCTCTTCCTG
GGTGCCTACCAGATGTGTGCATGCACGCGTGcacacacacacacacacacacacacaA
ATTTCTTCCACTGCATTCAttacagcatgcttttctctcttaccactatattgggaat
acttccccatgtcactaaaacttttagaaaacaccatttataatgaatacataactcc
ccatcagat

>DG8S302, chr8, pos 10062565 in NCBI build 33
Primer pair:
F: GCCATTCGTGTGGTCTGATA
R: AAATGTTTCTGCTGCCATCC
length: 268
Amplimer:
GCCATTCGTGTGGTCTGATAACAGCAGCAGCATTAAGTTCCCGTCCATTGGCTGCAAG
CAGGGAGGAAAAAAGGCCCCAGCGCCTACTGCCTGCTTTCCTGCCTGCGTTAATATCA
TCTCTTATCTTACCAACTAACATATAGGGgtgtgtgtgtgtgtgtatttatgtgtg
tgtgtgtgtgtgtgtgtgtgtCTGGGTATATATACACACACATTTATATTCGTTAATT
TCCGTGGAAAAGAAAGGGATGGCAGCAGAAACATTT

>DG8S257, chr8, pos 10128880 in NCBI build 33
Primer pair:
F: CCATGGCCTATGACCTATTCA
R: TCTCCTCCCAGCAGTCACAT
length: 147
Amplimer:
CCATGGCCTATGACCTATTCAGGCTCtgtgtgtgtgtgtgtgtgtgtagtgtgtag
tgtgtAGGGAAAGATACACGGTGGATGAATGAGAGCTGGGGCTGGGGATATCAAGCCT
ATTGACTCCCCATGTGACTGCTGGGAGGAGA

>SG08S120, chr8, pos 10154461 in NCBI build 33, alias name,rs3750310
CCTGGGCCTGCAGGTGGCTGCGAAGGGAGGAGGAGGAGGGGAGGTGGGCAGTGGCGCT
GGCCTCCCTGCGTGGACCCACTTCCTCCCACGCTGTGCTCAGAGAATCTTCTGGAGAC
CGCAGCTGTGCCTGGGAGGCCATCCTTGTGCCTAGGAGGACAGGGAAGAGGGTGGATC
TCAGACACAGGCAGGCTGGGAGGTCTGCACAGGTGTGGCCATAGAACATGGACGCCTC
CAGTACGCAGGCACAGGCAGCTCAGGGCCGGGAGCGAGGCCCGTCTCAGCAGGCGGTG
TCAGCCGCGGAGTGGGTAGGTCCTCTGAGGACGATCACACCTGTGGGCAAGAGCACAC
CCGGGCTCTGGGCCAAGTAAGCCTGTGAATCCCACTGGCGTTGTGAACCCGGAGCCCT
TGGGATCCGATTTTTTATTTGCTATTTGGATACAGCTGTAAGAGATGACAGATTATTT
TACATCCCTCAGTTCTCCGAACTTGCCTTGGACCAG
[R]
AATGTCAGGCCCTCACCGTGCCTTTTTCTCTTCTCCAAACTCTCTGGTGCTGCCTGGA
GCAGATGGCACCCCCCACAGACGTCGTCCTTATTGTTGTCACCAGAATATTCCATTTC
CACAGCCACCTGGCATCCCAAAGCCTTCCTTCAGTGGGCAGCCTCTTCACAGGCAAAT
GCTAGCGATGGTTCAAGTCACACGGCCAGCACATACTCCATTTCCAAGGAGGTCATTG
CTAACTCTAAATCTACCCCTGTTAGTTAGCCAACCCCACGTGCTCATTCTTAGAGAGG
TTCTGTTCCCTGAAAACAGTCTGGAGCCAAATGCTGTGTGAGCTGGGGCCCGGTCATG
GAAACAGAAAACTTCCATTCCGTCAAGCTGGATGGATTCTACAGAAGGAATTCGGTGT
TTACAGAATCGTTAGCAGGGCTGTTCGCGTGAAGGTCAGGGAAAAGCACCCCAAGATT
TCAGGATACCAAGAAGTTACTGAAATTGCCAAAAGT

>DG8S266, chr8, pos 10161672 in NCBI build 33
Primer pair:
F: GTGCTTTGCTGACATCTGGA
R: GGACAGGGTGGACTCACAAA
length: 412
Amplimer:
GTGCTTTGCTGACATCTGGAAATTCcacagaggctggtggagcgatcagctggagtga
agtgagacagacctgagggaaaatgctagctctgcctcttatagattgagtgaccctg
cagaagtcacatgatcattctgaggctcagtttctttgtgtgtaaaacagcgataatc
atacccatgttgcaggacttggggaagattaaatACTATGCATACACACACATATATA
tgtgtgtgtgtgtgtgtgtatatgtatgtatgtatgtatatactttgtacagagcctg
agatacagtaagtgttctctacatggtagatattattattGTCTTCTTGTAAAGGAGA
GAAGGGGATTATTTGCTGAGAACTTTAAAAAAATCTCATTCGCTTTTGTGAGTCCACC
CTGTCC

>DG8S238, chr8, pos 10223621 in NCBI build 33
Primer pair:
F: TTCCAGTGCCTGTTTCACAA
R: CTGGGAGGTCCTTTCTTGGT
length: 141
Amplimer:

TTCCAGTGCCTGTTTCACAAAGTATCtgaatgaatgaatgaatgaatgaGCAGCTGAA
TGTCTTTCTTTTTTATGGGGCCACATATGATTGTCTCCTTTGTAGCTATGCCAGGTAG
ACATAACCAAGAAAGGACCTCCCAG

>DG8S323, chr8, pos 10259523 in NCBI build 33
Primer pair:
F: TTGTGGGCTGTGTAGAGTGC
R: GCTGTGCCCAGAAACCTAAA
length: 250
Amplimer:
TTGTGGGCTGTGTAGAGTGCTCTAAACCCAGCTCGGCCTTTGCTGTATTAGACAGAAG
CACCTCATTCATATCCCTGGGGCCCCTGATGGTGCAGTGGTCTGGCTGTGGTCTGCAC
ACCAGCTAttctgttttgttttgttttgttttgttttTTCCTACCTTTTTCCAATCCT
CACACCTTCTGATCAACAGCCCCAGTAGGGTTTAAAGGTCCTAGAGCTACATGGGATT
TAGGTTTCTGGGCACAGC

>DG8S155, chr8, pos 10297139 in NCBI build 33
Primer pair:
F: TTGCATGGAGATGAACAACC
R: TCCACTCAGAGAAAGCAAGGA
length: 396
Amplimer:
TTGCATGGAGATGAACAACCAGGTTTGTGGCCACATCTTGCCgtgtgtgtgtgtgtgt
gtgtgtgtgtgtgtgtgtgtgtgtgtAttgagacagggtcttgctcttttgctcaggc
tggagtacaggcgggtgatcatagctcacttgcagcctcaaactcctgggctcaagca
atcctcccacctcagcctcctgagtagctgggtctacaggtgcagagcaccgcgcgta
cctaattcttttaactttatttttgtagagacaggttctccccatgttgcccaggct
ggtctcaaactcctgggcacaagtgatccgcctgcctcagcctctcaaagtgctggga
tttcaggcaagagccaccgggcctggTTCCTTGCTTTCTCTGAGTGGA

>DG8S291, chr8, pos 10313503 in NCBI build 33
Primer pair:
F: TGCTGAATGTCAGGGTTTGA
R: CCACCCTAGCAGGTCTCTGT
length: 361
Amplimer:
TGCTGAATGTCAGGGTTTGACTGTTTCCATAACAGGAAGCTGCTCACTGTCTCACTGT
ATTAAGGAACTCTGGTCTACACAATAGAGTTCCAACAAAACCCTAAACACTCCATTTG
CTGGGGGAACCTCATTGAATCCAGCTCTCATTGTTTCTTTTATAGGCTGAATCCTGTA
TTTACAGTGAGAGGGgtgtgtgtggctgtgtgtgcacgtgtgtgtgtgtgtgtgtg
tgtgtTCGCGCATGCACATGTGGGTTTAACAAGATATGAAGCCTGGCTTGTCACCTTC
CAAGTTCTCCACTTGAACTTGAGCATAGATCAGGGTGCCATGATTCCCCAGACAGAGA
CCTGCTAGGGTGG

>D8S520, chr8, pos 10427394 in NCBI build 33
Primer pair:
F: CTGAAGAGCAAATGGCCCT
R: TAAGATCACATGGCCCCCT
length: 189
Amplimer:
AGCTGAAGAGCAAATGGCCCTGGGAAGTATTCCTTTAGGGTTACACACACACCACACA
CACACACACACACACACACACACACACACACACACACACGAAAATCTCTAAAGAGCAATGAG
CATAGCAGCCTGGATGGTGCTCATCCAAGGATAAGTCTCCAGACAAATAGCACANCAG
GGGGCCATGTGATCTTAGTTCACGAAGACATTCAATAAAGACCCAACAAAACCCACGC
AACAGTCTATGTCTCTGGCCCCCTGCAGGGACCTTGCTCTAGCACACGGAGCAGGGTG
GGGCATGGCCACAGTGGCCCCTACTGCCCTGCACTTCCCACAGCT

>SG08S506, chr8, pos 10492671 in NCBI build 33
TTCCATGCATTCCACTTCTTTCTGGATCTCTGGTTTCACAGGCAAGATGGGACAGGCA
GAGAGAACCTGGGCATGTGCCCTCTGTGGAGAAAGTGACTTCAGAAACCGCTGAGGCT
CTATTAGCCTGGGATTCTAAACTCGGGGGGACATGAAAAACTCAAGAGACGAGTCATC
AGGCTCTATATTCATAAGACTCTTCTCTGTGTGTGTGTGTGTCTCTTTTCAAACAAAT
AGCACTGCGCAGCATCCTTAGAGACTACAGCCAAATGTCCTTCATGTATTTTCTCTAC
ATTTCAAGAATCTCGGGACCATGCTTCCTATCTAATGTGTGACCTTGAGAGTTAAAAT
CAAGGGGAAAAGGTCACCGAATTGGGGGCAAGTTTGAGTTCCCGTCACCAGCCACAAT
CTCTATATCAAATGGAGGACAACACACCACCTGGGCCTCAGCCAGGTTTGCCTGAAGC
AGGGCCAGGCAGCCTCAAGGCCTCCATGGTAGGCTG
[R]
GGACATGGGGACGTGGGGAAAGGGGGTGCAGGGAAACTGGGAACTAGGAGGGGAGCGT
GAGAAAGAGGGAATAAATGCGTACGCGGATGAAGAGGAACAGCAGGAGGAGATGAAGG
CGGCGCACAGGGCAGAACGGCAGACACAGGGCTGGGAAGGTGGCAGGGCCGGACTCCA
GAACCTCAGCTGAGCGTTTTCTTCTCCTGTGTCCCAGGGATGGTGTGAAGTGTCTACA
GGCATCCGAGTGAACCCAAAGGGAGAGTTTGGCTGGCACACGGGGAGACGGGCCAAGG
CGCGGCGGGCGAGGGCGGCACAAGCATGGCGCTGCGACACCACTGCTGGGAGCAGGGC
TGAAAGGTGTCTTTTGCTGTAAGGACTTTCATAAGGCAGTCCCAATCCAAAGACTGGC
TTTAATTTCACGGCCTTAGCCTCTCAGTTTCTTAAGCCTTCTGAGGACCTCCTGATCA
TGACAATTAAGTCACTATTTACAGCCATGTGACAGA

>SG08S42, chr8, pos 10574489 in NCBI build 33, alias name,rs2278335
atgtggatgatctaccactataggtgtaatctttaacatcatcttattccttcttaaa
gtaagttatccgcttgtaaactgcttatttctttggggcattgtccccataaacttttt
tataaagcatcagtgatttcaccattccacccaagcttcaccataaatttggtgtttg
ttcttgcttcaattttagcagaattcatgttgttctgaaaggggctctttcaaattg
atgtcttagtgcctcaaactagatcatgttctaacatgttataacaagttattacaag
tgtattttggtgcaaaaaaattgaaatccatgcataatatgacctttccatgaagttt
tggaagacctctcCTATGCTTATGCATACACTCCCCAAACGTATCAATCCAGTTGCTA

TTGCCCAAGGAACAGAAGGCTCATCACTCCATGGAGGGTTTTTCCTGCAGCCCCTACC
TAAGACCTTCTCACTTTCTCTGACAGTCCTATCATC
[R]
TGTCGTAAAAGGCCTGCCCACTTAGTCCAACACACTGGAAATGGATGATTGACAACAT
GTTTATTTACCCATCCCCTGGGGGAAAGTCTCAGATTTTGTGAGGTTGTTGCCCCTGC
AATGTGCTTTAAACTCAGCTTTCTGTTGCTTGTGTCTCTGGGTCAGAAGAATTTGTCA
GTGATAATGTTTTTGTTAAAGTCCTATGCCCAGTTAATGCCAACTCAGCGCTCTCATC
CCCTAGGGCTCCTGTAATCATTTTTCTTGCCTTCTCTTACAGTTTCTGTATGTTATAG
AAGTTCAAAGAAGACAAACTCTAGCCAAGAGCAGTGTGAAGAAAAGAAGACGCTATAT
TAATCACAGTCCAGGGATGCCTTCTGGCTTCCTGGCAGCAATTCCGGCCTGAGATTCC
TTCTCTGTGCATACTTCCTGTCAACATTGTGTGATGTCAAGCTGTGGCCGTCACAAAA
GTACTGTGAACACCTGTAAATCCCAACTATCAAAAA

>SG08S50, chr8, pos 10587063 in NCBI build 33, alias
name,rs2292369
TTGTTTTGATCCTAAGAAAAATGGGTGTCATTTTATCCAGGAATCTAAGaattataat
aataaattaataaaGTGAATGTGATAATCAAACTGTGAGGATACGAACAACATAAGAT
TTAATGATCGTTGTCAAAACCAGTCCGTAGGGCTGTGGAACTTTATCGTACAATTCGA
CTTTGATATGTGTTTAAATATATTTTCTAAGTTATCCACAACCCAAAACAGGACCcct
tagaggtaatctagaggaatccctcacgttacagacagagccactggttaagggtcta
gagtcacacagggagttactgcagaatcactactggaaccctgtgctcttTCTGCAGG
GATTCGGATATTTTGGTTGGATTTGCATTCTTACGTCAATGTATGTTCTCCAACTCTG
CTCTTACATATTGAAAGGCAGGCAGCTATTTTTAAACACCCTGCCTATTAGCCTTCGG
AACATAATAATAATGGCAAGCACCCTTTATTGCTTC
[R]
CCGAGCTGCAGACACCCTTCTAGGGTGTGAACAGAGCTCAGTAAAGATAGCAGCCTCA
GGTCTGTGTGTTGCTTTGAGCCACGAGCTGGTCTGCAGGCAGCAGCCATGGGCCGTGC
CTGTGTTGGTATGTTTAAGAACATTGGCGAATACAGGAATTACATGGACTAGGTTTAG
AAAACAAACAGTAACGTACAAAAAGGAAGGTTTGATATGGACTGCAAGGACATAAAGC
AGGTGCACATGCGTGCACTACCAGAATAGCTACACGGTGGGAAGGAATTCCAGAACCA
CGTGAGAAAGAGTTGTTAGGACAATGCAGTCGTGAAATACCATGTTTCCAACCCTATC
ACTCtattttaaaatagataataattataatttttattaatatCAAACAAATTAGCTT
TGGGACCTATGGCCCTAACTTAGGGGTCACGGCTGCAGTCCCCTTTCTTGCAGACCTG
GCAGGCTGCGCAGATAACTGCCCCCAGCGTTGGCCA

>DG8S148, chr8, pos 10609020 in NCBI build 33
Primer pair:
F: CCAGACATTTCACACACTGGA
R: TTTGCCAGAACTAGCGGTGT
length: 140
Amplimer:
CCAGACATTTCACACACTGGAACATATATACAGTacacacacacacacacacacacac
acacacacacacaTGCTAGCATGAAACATCTGAAGTACACAGCCATCCTTTGAAAGGA
CCCCACACCGCTAGTTCTGGCAAA

>DG8S271, chr8, pos 10624569 in NCBI build 33
Primer pair:
F: AAATCGCAGCTACACACAGC
R: TTTCTGCAGGTGTTGCAAGT
length: 259
Amplimer:
AAATCGCAGCTACACACAGCAAAGACTAACAGTATTTACTTAAAAATATTGTGTGTGT
Ttatatatatatatatatatatatatatacttattatatat CTTTTTTGTGATTTTTTTT
CTTTTCCTTTTTTTTTGTGCCCAAGTAGAGATACGATGCGATTGAAACGATGCCCTAG
AACAGAAATATTCTTTAAAGGAACAATACTTTGaaaaataaaaaaaaatttaaatCGT
TGAACATACTTGCAACACCTGCAGAAA

>DG8S197, chr8, pos 10625200 in NCBI build 33
Primer pair:
F: GGTGAAAGACAGAAGCACCA
R: TGGTGGGAAGCCTTAAATTG
length: 185
Amplimer:
GGTGAAAGACAGAAGCACCAAACAGTCTTTGAAATGGGTCAGTTATTACAATTTTGAC
TTTTtatatatatgtatatatatatatatatatatatTCTAGTTTTCCTCTTTGTGTTAT
TTTTTTTTTTAAAAAAGCACAAATGAAAAATGAAGAATTCTTTCCAGATCAATTTAAG
GCTTCCCACCA

>DG8S215, chr8, pos 10641313 in NCBI build 33
Primer pair:
F: ATAAAGAGGGTGTGTATGTGTGC
R: CTCATCTTCTCTCTACAGATGTACTCG
length: 210
Amplimer:
ATAAAGAGGGTGTGTATGTGTGCATATATATAGAGAGAGAGGCGAGTATATATACATA
TATATATATAGAGAGAGAAAGAGATAGGGTGTGTGTATAGATAGAGAGAAAGAGGGTG
TGTGTGTTTATATATAAAGAGAGGGCGAGTATATCTATATGTAGAGAGTGTATATATC
TATAGAGGGCGAGTACATCTGTAGAGAGAAGATGAG

>DG8S159, chr8, pos 10704990 in NCBI build 33
Primer pair:
F: GCAGGACAGGACCTGAGAAC
R: CCACATCGCTATTGGAGGAT
length: 399
Amplimer:
GCAGGACAGGACCTGAGAACCAGATACGCCTGCAGGTGCCTGTCCCTCTGCGCCCCCC
GGGTGGTGTTAGGGCTCCCTGTGCACGGAGGCCTGCAAtcatttggacaacacatggt
taccaggtgtctgctatgtgccaaacgatggtcacaggagggtgagaaagacagtctc

cacgttcaagagtacaaagtccgtgatccaggaagacaATGAGGCAGCCACTGTGTCT
CATTTCTGGATGAATGGATGTCACAAAGCCATGGAAGTGGTTCAGTGGCTTCCATATC
ACTAGGCTACCTCGCCTGtctctctctctctctctctctctctctgtctctctctctc
tcAGAGCAGGCTACCTAGGATTTTACTTGCAATCCTCCAATAGCGATGTGG

>DG8S212, chr8, pos 10726663 in NCBI build 33
Primer pair:
F: TCTAAGATTCGCCAGCTTCC
R: ATTCTAGGGCTTGCAGGTCA
length: 278
Amplimer:
TCTAAGATTCGCCAGCTTCCCCCGCCAGAGAGCGTCCAGCACTCACTTCTAAGATCAC
CCCTTCTCCCACTGAGACAGCTAGCCTTGCACAAGGCATTCCCAAGCAAGCTCCCCAA
CAATATAAGGAGAAGAAAGAGAAGGAGTGGCTacacacacacacacacatacacacac
acacacacCTCTTAGTTGTCATTTTGAACCTAATTGTTTTAACACCAGCTGTCACATC
TGCAGAATTCTCTTCTCTGGTACTAGTGACCTGCAAGCCCTAGAAT

>D8S550, chr8, pos 10752550 in NCBI build 33
Primer pair:
F: CCCAAAGTCATGAAATGAGA
R: ACAACATACCTGTTAGGAGGTG
length: 103
Amplimer:
AGCTCCATTTCACTAATAAGGAGACAGATGTGGAGGTTGGGGAGTTGGTC
CCAGGTCACCCAACTGGGGAGGGCAGAGGTTGGGGAGGGACAGGAGTCAA
TAACCCAAAGTCATGAAATGAGAAAGGAAGTAAACACTTGGNTGGAGANT
CACACACACACACACACACACACACACACACACACACCTCCTAACAGGTA
TGTTGTCTGCAACAAGGCAAAAATAATTCATTAATATCTCATTTAAACTT
GAGGGCGAGGGAATTCCTGAACCACCTCTCTGGAGCAAATAATGGAAATT
GGAAATTGATTGTCATTTACCTTTGAGGAAGACTTCGGGATGTGCCATGT
CTTTGGTATAGGGCTGCGTGGTGTTGTGACGCATGT

>SG08S94, chr8, pos 10763565 in NCBI build 33, alias
name,rs2898254
gattggcttttactctatgggcaacagagagccatggcaggctttccaggaagggagt
gacatgcaccttagacaggtcagcctgacagcagcttaaaactagatggaatgggaga
caaCTTTGTCCCTAAGCTCAGTCCCCTAAAGATACCAGCACATGACTGTCAGGCCCCT
GCTGGGACAGCTGCCCCTCCCTAGGCCTGTCCATTCTCTTACCTCCCTCCTGCCTCTG
ATGGGGAAGGGGTGATGGGTTGGAAGTGGGTGTGTGCAACATTTACCATGGCCAGGTC
TGCTCTGTGCTCTGTCCCCACCCAGCACACCCATCTCCATCCATACCGGCCAGCCTTG
CCTGTTCCCTCACAGTGATGCATAAGCTGGGCTTCTCCTGCGGTGTGATACTAATGTA
CTAGCCAAACCCTGAGAGGCCACATATGGTGGGTGAGGGATGTGGGACTGCCAGACTG
CCAGCCAGTGCCCTGAAGACTCTGCATTTCATATGC
[R]

TACAcatttagtagtagtgtgaccctgggccagttactgattctttctgagcttcggt
ttcctcatctgtaaaatggggatgatgatacttaccttaaagggctgccatgaggtcg
aaagacaaactatgacaaacagccagtctcgtgcccagcccagcgtgggtgcaagcta
tctggtggctGCTCGgatgatgatgatgacgatgacaacgatgacgTAGCACCCCATT
TCCAGCTCACACCATCGGGATCACCGCCAGCATCAGCAGCATCATCAAGCCATCTTCC
TGCGTTGTGGCAGCTTGGGCCCCCACTGGCCATGCAGGAGCCAGGAGATCAAATCATG
AATGGGGCTCTTTGCACTTCAGGCAAAGTGCAACTCCAGGAAAGAGAGAAGATTAAGG
CCAAATCTCTGCACCCAAACAGGATCCAAGAAGTGGGGTAATCTGGGACTCATCACAT
CTACATAAAGGGAGGAGGAAGCCCCAGGGTGGCCTG

>SG08S95, chr8, pos 10810525 in NCBI build 33, alias name,rs2898260
TCACACATCAAAATGTGGACATTTAATTCATTTTAATCGAGAAATTAAATGCATCTGC
CTTGCTTCCTCTCCTGGGGCTCTTCCATCTCAGGAAATTCCCACACCAGCAGGTCTGG
ACAAGTCCTCGGCAGTAACTTCACTCAGCCTGAATTCTTCTTCCTTTCCCCACGGCTC
TGACTCCAAGTTCTGATCATCAAGTTGAAAGGGAAACTTACAACCAAAGGAGATGTAA
ACAAGAATAGTCTCTGTCAGTTCAGTGGAGAGAGAGAGAGAAGCTTTAATGGGCACTA
GTCAGTCAGAGGCTTATTCTGCAAGTGTTCATTAGGAATCAGTGGAATTTCCACTGTT
TCCCTGGTGTCACTTGGGCTGCTGCCTCTTGGCCTGTGTCAAAGACAACAAAGGAAAA
TGGTCCTTGCCCCTCGAGGTGGGACTGGATGCCAACCAGCCCGACAGGCAGTGGGTGG
TTCACGGTTCTGTTCCCACTGGAGGATGCTCTTGTC
[K]
GCCTACCCTCTCGCCTGAGACCTGGAAGGAAGTGCATGCCCAAGGGTGCCAGTTGGAG
GGGAGCTAGCAGTCAGACCAGGCTGGTGTAGGCTTTGCAGACAGAGACTCACCTCCTT
CCACTGCCAGAAGATGCTGCCGTCGGGTGAGGAGCTGTGACCTGGGCAGAGGAAATTC
AAGGAGCCAATTTCTGCTCTGTACATAGAAAAGGTGGTCCTCTCCTGTTTGTTCGGGG
GGCATCTCTGAAGCCCAGCTCCACTCTTTACCATCTTGCTAAGAACCAGGAGTCTGGA
ACATCTCCCAAAGTCTACGTGGGGCTCAATATCATGTGCAATCACTTTGCACCCCGTT
ACGAATGTGGGAGCAAGAGTTGGTCAATTTTGGAAGGGCTTGGTTAAGACAGCTGGTA
AACCTCAGCTGAGATAATATCTCTATTCTCCTCTCCAAAGAGGTTGGCAGCTTCACCG
GGCAAACAGTGCCCAGAGAGGCCTGCATAAGCCACA

>SG08S96, chr8, pos 10829574 in NCBI build 33, alias name,rs2898261
CACGGATAGAAGGCCACCACTGAGCAACTGTAAGTGTGCAAGTCCAATCAGACCACTT
CCAGAAGGTGCTTTCCCCTACAACTAAGACAGCATTCACACTTAACCCTTGTAGCAAC
TTCCTACACTGAGAAACACAACAGAATTTTGCTGTATGATTCTCATCTTCTCAGAAAA
ATGTGTTGTCTCTTTGATCTGCCTAATTAGGCTAATTGAACTAGGAATCAAAGCAGTT
TCTGGGGAGGAAGGTAGGAAGTTCTGTTTTTAGTTTGGCTATGATTTGTCCCAATCAT
TTTATGCTACAAAAGCTTTTGTTGGCGTTGGCCTCCGAGTCAGTGCTTTGAAAGGTGG
CCGCAAATGTGATTTATGGGAAGGTGCTGCCGGGGGCATGCACTTTATGGGCAGGTGG
TGCCGGAGGAAGTGGTTAGGAGACAGTTTCCTCACCCATCTCCTGGAGAGACCTCCAT
CTCCCTTACCCACCCTGCAGTGGTACCACGCACATC
[K]

GACGAAAGAGGCTGTCGCTAAAACGCTTTGAAAAGCATACACACGTGCACACACACAA
TGCTCACGGGTAGTATTTGCAGTACAGAATTCTAGTACTGTGCACCTCAGCTACAGAC
ATCCCAATTTTTGAAAGTGTCCATAATTTATAGCAAGAGATATTTGGGTAAGTGCAGA
AATTATACACGAGAGTCATTGAAACTGAGTTTATAAGAGTCAAAAATTGGAAAGAACC
TGAATAACAAGAATTGTAAACTGCTGGACTTCCAGCAAGAGGGAGCTGGTTATATTCA
TGCAGAGCGGCCTTGAAAAAGATGCCGTGATTGGATAACGTACACTGTACACGGCTGA
GAACAAAGGAATCTGAAATGACAATGAATGGAGTATTAGCAGCAGTGACCTAGTGAAT
TTTGTTCTGTTCATTTTTGTGCACTCTCTAAAATTATTTACAAATTATGTCATTTTTT
ATGATAAAAAGTTGTCTGAATTTTGGAAAAACAAGG

>SG08S5, chr8, pos 10857894 in NCBI build 33, alias name,rs2001329
TTTATTGTGAACTTGCAGAAAATGGAAAGGATTATGCTTTAAAGACAGTTGGCTTGGC
TGGATAGAAAAGATCCCTCTGTCCTGTTTCCCTGTCCTCCTTCCCACATCGATTTAAA
AAATTAGATGCAAATGCAAAATCCTTAAATTATAGATTTATGATAAATTTAAATTCTG
GTAGAATCAAGGTTTTATAACATTTAAAGTGTCTGACACTAAGTGTATATAATCTTTT
AAGAAACGTCTTCTTAACAGCGCATGGTATTCTGTGACTGTTCGTGTACCATGAATAT
TCTTATTGGGTTCTAGAGTTAGTTACTGACTCTTGAAGATGGGCATCTAATGGTCCTC
CTGTGGAAGTGGAGAGCAGCTCTCCACTGTTTGATAACATTTAAAGCCAAGGGTGAAC
CACTCAAGAAACATTTGGTGGTTATAATATTTTTTTGTTGTTGTTAAGTACCATCAAT
AAAACTGAAAAATCTCTTAAGTACCTGACTCCTGCA
[R]
TGATACAACTGCAGTGATAAAACTTTTAGCTTTTTACATCAGGGGTATTAGGTATTTT
CTCACAGAAATAGCCTTTtgaggtgaaattcacataacatacaattaaccattgtaaa
atgaacaattcagtggcgtgtaagagtatgtttacaatgttgagcaaccatcacctct
gtctagttgcaaaatgttttcatcactccaaaagaaactcctttattcatCATAGCCC
AAAGTtggaagtattttcttgattgggctcttgattacatggatgcatctgagtcatt
gaattgaagcctaagatgtgcttaatttcactgtgtgtaagtttcacctcagttAACA
AGAGAGAACAGAACAAACCAAAAATCTTAATTCTTTTGAAaaaaagactttctggctg
ctttattaaagaagccaggggaacaaggttaaaaggaaatcagttagcagtgaccaag
gcaagagatgatggtggcttggctgaagatggtgac

>SG08S102, chr8, pos 10865779 in NCBI build 33, alias name,rs3021495
ggatggcatctgaatcctggatttcccagacctcagaaccagaaggaatacatttcca
ttgtttaagccacccaggcaatgatatttctgttataaaagcccaaactaagataCCC
ACACAGAGAACACCTACACACAGTGTGGTTACAGGTTGCATCATTTCTTTTTCTTTTT
CAATATTTGCATATTCTCTAAATTTTCTACAATGACCCACCACATGAATTCTTTTAAA
AGAAAAAAATGGTAAATATGAAATAGAATAGTAGTGTTGACCCTTAAGAGGAAAAAGA
TGGTAGAAGACACTATGTTGCTTACAGTAGACTACAAATGTGCGTGAAATTTGTAAAT
AAAAGATGAATACTTATAAATGTCACCACCTCCCTCTCTGATGTTTCTGAAACCAGAG
CATATGTGGTTAACCTTGCTCTAGCTCCAGTCCATCCATCCATCATCATGCTAAAACA
TACAGCTGTAGGCAGTGGAGAAGAGCTGTATGTGGT
[S]

AGGAAAGCGGGAGACAGGAATTCCAGAAATGTCTACTAAAGCAGTGCTTTAAGTTTTA
ATTTATTCAAGAAACCAATACATATCAGAGCATAAGTGAGAAAAAGAAAACAATTATA
AAAAATACAAAGGAGTCCAGGATAATAGAAATCTTTCTTCATTCACATATTCTAGCTA
GAATAGTGAGAAGAAATTCTCCCTCAAACGTGGACAGTCCCTTACATCTTCAGCCGAC
ACGGAAGTCTTATCTGAGAATAGAATCTCTGCTACACTAACCTAGGAGACGGCCAGGC
AACTGCTGCGGTATACCCATCACCCCAGTGTTCTGGAAGAAAAAGACAGCAGGGAGAA
GTTCTCTTTAGAACCAGCTCTTCTACACCAAATGAACTCAGGAGACAATGAATGGAAA
CACCATGCCATGGTGTGAGCAATGCAATGTGGAGCACAAGCAGCGGAGAGTCTGCTGA
AGAAGCTACTCCCCTGAAATAGGAAAGAAGAAAACC

>AF131215-1, chr8, start pos 10872575 in NCBI build 33
Primer pair:
F: GCCAGCCAGACTGGATTAAG
R: AGCCGAGAAGACCTGTGAAG
length: 257
Amplimer:
gccagccagactggattaagacccccgtcaatgacctcgtttaaccctagttacctc
tttcaaggtccaaacatagtcatactgggggtcagggcttcacatatgaatttgctga
gggggcttgagggatgcacaattcagtccataaACGCTGTATATATTTATTTGATGTA
GTTTTGTTTTAAATAAAAAgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtATCTAAA
GTAGGCTTCACAGGTCTTCTCGgct

>SG08S507, chr8, pos 10881766 in NCBI build 33
GCCAAGAAATGACATGTTGATCCTCAACTAGCTTGTGGACAGAGTGTTTCTTTTCTGG
TCATTCCTTTCAGCCACTGATATAAACAAATATAATTATCCAATCAAAATTCTGAATG
ATGAGAAGTTTCCTATGCAGTCCTAAGCATACTGGTTTTACTTTCCATAGTTCAGCAA
AAATATTACTGGATTACTGGGGCTTTAAAATGGCCCAAGCTGTAGCCCACAGATCTGC
ACTAGCTCACAGAATGCCACGGTTTGGTTTGTTTCTGACTATGATCACAGAGTAATAC
TAACAAAATCTTGCTATTTGAAGGAATTATTAATTTTTGAATTACAATTAGAATACAA
TTAGATTATTCCACATTACCCAGTGAATTATTATTATAGGTGCCAACATTCACAGTTT
AATCCAATGAAGAAACTGAGCCTATATAAAAATAACCACCACCAAAGCAGAAGAAAAG
CTACGTGAAGAACTGAACTCAATCTTAATGGTTCCT
[K]
CAGATAACTACTCCCAATTGACCCAAATAAACCAATTTACTGGGTCAAGAGAGAGCAT
GAAGGAACTAAGGACTCTGTTAGAAGTGAGGAAATATGGAATTACTCGTGCATGTAGC
ATGTATAACATACAGAACAAGCATTTCTGAAAATGTGAGCAGTATCAATAGGTTGGAT
AACTTTAGCCCCAAAAACTCTACTACTACTGCTTTTTGGAAATAATTAAAAATATCTC
AATACAGTTTATAAACTTTGATAAAGTCAATATAAAAGTAATAACATCATATAAACCG
GTCTTTTGCTCATTTGAACTCCTGACATGGGGATTATAAGCCATAACAGATTTCTTTT
TTCAAATATCTGAAATACAAGGAATAATTTTCTTTAAATGAGTTGCAATATACCAACC
AGTATTGGGCTGGTTTCTGTGATTTCCTCTTAATTGGTGGTAGCAGCAGTAATCCTCT
AATTCTTAGGATGGACAACTGACTTTTGAATATCTC

>SG08S70, chr8, pos 10881783 in NCBI build 33, alias name,rs2409716
GATCCTCAACTAGCTTGTGGACAGAGTGTTTCTTTTCTGGTCATTCCTTTCAGCCACT
GATATAAACAAATATAATTATCCAATCAAAATTCTGAATGATGAGAAGTTTCCTATGC
AGTCCTAAGCATACTGGTTTTACTTTCCATAGTTCAGCAAAAATATTACTGGATTACT
GGGGCTTTAAAATGGCCCAAGCTGTAGCCCACAGATCTGCACTAGCTCACAGAATGCC
ACGGTTTGGTTTGTTTCTGACTATGATCACAGAGTAATACTAACAAAATCTTGCTATT
TGAAGGAATTATTAATTTTTGAATTACAATTAGAATACAATTAGATTATTCCACATTA
CCCAGTGAATTATTATTATAGGTGCCAACATTCACAGTTTAATCCAATGAAGAAACTG
AGCCTATATAAAAATAACCACCACCAAAGCAGAAGAAAAGCTACGTGAAGAACTGAAC
TCAATCTTAATGGTTCCTTCAGATAACTACTCCCAA
[Y]
TGACCCAAATAAACCAATTTACTGGGTCAAGAGAGAGCATGAAGGAACTAAGGACTCT
GTTAGAAGTGAGGAAATATGGAATTACTCGTGCATGTAGCATGTATAACATACAGAAC
AAGCATTTCTGAAAATGTGAGCAGTATCAATAGGTTGGATAACTTTAGCCCCAAAAAC
TCTACTACTACTGCTTTTTGGAAATAATTAAAAATATCTCAATACAGTTTATAAACTT
TGATAAAGTCAATATAAAAGTAATAACATCATATAAACCGGTCTTTTGCTCATTTGAA
CTCCTGACATGGGGATTATAAGCCATAACAGATTTCTTTTTTCAAATATCTGAAATAC
AAGGAATAATTTTCTTTAAATGAGTTGCAATATACCAACCAGTATTGGGCTGGTTTCT
GTGATTTCCTCTTAATTGGTGGTAGCAGCAGTAATCCTCTAATTCTTAGGATGGACAA
CTGACTTTTGAATatctcagtaatgagatctccatt

>AF131215-2, chr8, pos 10885941 in NCBI build 33
Primer pair:
F: GGAAGCTGATGAGGTGTATATGG
R: GAGTCTGAGGTGGGAGCATC
length: 242
Amplimer:
Ggaagctgatgaggtgtatatggatactctgtgctatctttaagcttttctgtaaaca
taaaaaacctaaaattattttaaaataaaaGgtatgtatgtatgtatgtatgtatgta
tgtatgtatgtatgAtttttagagatgcagtctctctctgttgcccaggctggtgtgc
agtggcgtgatcatagctcactgcagcctcgaattcctggacccaagggatgctccca
cctcagactc

>SG08S71, chr8, pos 10887924 in NCBI build 33, alias name,rs2409719
CATACTGCATACAAGCCAAGAACATAAAATGAACCTCTCAGTCTTACCCTTCCTGCAA
CTGAGGACCCGCTTGCCGGCACTcagtaggacacgtgattaaaagtgtggcttgtgag
gccaaactgcatggttctgaaacctggttctaccatttacaagctgtatgacattagg
caaattacttaccttctttaagccacagtttcctccttgagacaggtggacattaaca
gtactagctcatgaatttagttggccgtttcaatgagttaatacaCATCAGCTGTTAC
TAACATCCACCATATATTCCCAGAGGGGTACCCAATTCTTTGGGGTCTCAATGACCCT
TGTCCTTCACCCTCTAGAAAGCATGTCATCAGAGAATAACAAACATTATCTTCAACTT

ACTTGATCCACTGCTGCATATAATTTAAGTAAGTCATTCTCAAAACTTACTTTACTAA
TAACATAGTCTATACAACCCCCAAGTAATGACCACA
[R]
TGCAGTCTGTTACGACAGCTATGGCAAATACTGACCTAGATCGCGAGAGAAAAGAACA
GCTGCTGTCCTCACAGCTGCCCCGCCTCActttctgctaacagacgctgcttctgtat
ggccatcagcttgccatgtgctttcaggcaggctggacccatccccattccctacatc
agcagcatcagcttcaatcaggaacttgtgaaaaacacaaattgtcagtccccaatcc
aaactagagcagaaactcttcaggtggggcctggcaatctgtgttttgataagtcctc
caagtcattctgatgcagaccagtctgaaaactactgACCAAGAACCACTGAACTAAT
AATGGCAACTGCGTATCTCTAAgtttagaaatggggtatacaacaattctagccaagg
aggggcaacttctagaaattttgcttactcttaaaaatgaacacaaagaaggtacctt
atctcttctggcctttagaatgttgttgattagaga

>SG08S517, chr8, pos 10893214 in NCBI build 33
CTTCAGCTTCAATTCAGGTAGAGCAGTGAGGTTTGAAAGTGCCTCAAGCAGAGCCCAC
AGTTCTCTGATCCTTTACAATATCACACTCTGTAATTGTGTGGCATAGCAGCCATGCT
AGGAACGAGGTCAATTACTTAGGTACTCGCTAGACTTTTTCCTTTTCTCCACCCCTGG
GGTCCAGGCTCTTTTCCCAGCACTTACTCAGGGCTGTCATTAGCCCTTTCTCCTCAGT
TTCATCGCCCCTGCATTTACGTTATTCTAAGTCTTCTCCCCTATGGGTTCCTGTGGGG
AAAATAAAAGATCCGAAAGGGAAAAAAGCAGAAAAGAATGAAATAAAGTGAAAATTCA
AGAGGTTCTTGTTTTAAGTCCCTATCTTAAAAGATATATGGCTTTGTCACTTTCAAAA
GCATTACATTATAAGGTATGTGGCCAAAACACAATCAATAAACAAACACACGCAGACA
GATACAACTAAATACACACAAACATACATGCCACAA
[Y]
AGAGAGGGTCTTTGATTCTTAGGATCCCCCTTTTCTTTTCCATCCATTAATTCCTAAC
TACACTGTTCTTCTCTAACCATGTAACTATTTCTCAATATCCATTTGTCACATGTAAA
ATATTCTCAAGACCACTCCTAGCCTTGTATACCTGAGACCTGTCTCCCATACCAACAC
CATCACTTAATTAAGAAACAATGGCACTAAAGCTTTGCTTACAAATCTGTGAAACAAA
GGTCATCCCACCTGCCTACCTTCCCACTTCACCTTACTAATAGGAGGTTTAAAGGAGA
TATGTGCTTAAGTACACCAAAGAACCAGAGGTACCAACAGGGTTAAGATACGCCTTGA
ATCCAAGAAAATCCCCTGAAGCAGCATGTCAATACTGAGTAACACAACCATTCCCTAG
GCTATCACCTTTTTTTTTTTTTTTTTTTTTTTTTTGAGACAGAGTGTCGCTTTGTCA
CCCAGGCTGGAGTGCAATGGCACGATCTTGGCTCAC

>AF131215-4, chr8, pos 10912771 in NCBI build 33
Primer pair:
F: AGCCACACAGGTCACAGATTT
R: TTCTGACATTCTTAATGGGCTTT
length: 248
Amplimer:
AGCCACACAGGTCACAGATTTTGGCTTTTTAAGAAGAAACAAGAGCCCTCATGCAGAC
CCCTGGTACAGTCTCAACTGGTGGAGATACTATGTAAAGGAGCTTTTAAATTATTAAA
TAGCCTCtaaataaatacatattttatatatatatatacacacatacacacacacaca

cacacacacacacacacTTATATTACATTTATTAGTAACCTAATTTTTAAAAGCCC
ATTAAGAATGTCAGAA

>SG08S508, chr8, pos 10914173 in NCBI build 33
CCTGTGATGGGATGGCACCCTGTCCAGGACTGGTGCCCGCCGTGTGCCCTGAGCTCCT
AGGATAGGCTCTGACCACCTGTGACCAGGTGGAATAAGTGGGTAAGAATTATCTCACG
TTGCATTAATCTTTCTTAAATATAGGTATGGCTCACATTTATTTCAACGTTTAATGCT
AGAAGTGTTTTGGTCTTTACTTAAAAGTTTGGTGGTGTTTTTGTGAACAGAAATATGC
CACAGAAACTTAATCTTGTTTGTATCAATTAGCCTATGGGAAAACTGGTTTCCATATA
CGTAGTTTCACTTCAAATTGCAGTTTCTAAGAACTCACTGATGACAGTGAAGATTTAC
TGTATGGGGTTTTAGAGTAAATTTCTAAATGTACGTACAATTTTTCACATTTTTTAAA
TATCTATTTGGTGATCTATATATTCAACAGATGAGAATCAGTAGTCACTTTTAGGGAT
AGTTTCCTGGGAGATGGCACCCAATAAAGTCTCCAA
[Y]
GATGGGACATGATTTTGAAAGAGTACATTAGCTGTGCTCACAAACCAAGATCCAATCT
TTCCTCAACCAGATGAACTTTTCCTTAAGACCTGAAACACTGATGAGTCTTGGGCACA
TGGCTACAATACTTTTCATTGAGTCCCTGAAGGCCATTTTTACCTCAATGAAATATCA
TCTAAAGAAAAATTATTTAAAACTCCAGTTGTATAATTTCAAGATAGTTTAGTGTATT
TAGTATGACTCACTCTTCATTAAACTTCACAACTATTTTTAAAAGCTAATTTAAATAG
TTACCTGTTTGAGCTGATCGATGGAAACAGGGCTTGGGCTATTTCTGTACCACCCTCA
GACTAAGAATGCTTTTTATATTTTTCGAGGGGACTGTGCATCAGAGGCCTTCTGTGGC
TACACATCTTAAAATACTTCTTTACAGAAAAAGCTTGCCAAGTCCCGAATCAAAACAG
AAATCAAAGTTTTAAAGGGAAATCGTCTCTTGTACT

>SG08S73, chr8, pos 10914271 in NCBI build 33, alias
name,rs2409727
ggtaagaattatctcacgttgcattaatctttcttaaatataggtatggctcacattt
atttcaacgtttaatgctagaagtgttttggtctttacttaaaagtttggtggtgttt
ttgtgaacagaaatatgccacagaaacttaatcttgtttgtatcaattagcctatggg
aaaactggtttccatatacgtagtttcacttcaaattgcagtttctaagaactcactg
atgacagtgaagatttactgTATGGGGTTTTAGAGTAAATTTCTAAATGTACGTACAA
TTTTTCACATTTTTTAAATATCTATTTGGTGATCTATATATTCAACAGATGAGAATCA
GTAGTCACTTTTAGGGATAGTTTCCTGGGAGATGGCACCCAATAAAGTCTCCAATGAT
GGGACATGATTTTGAAAGAGTACATTAGCTGTGCTCACAAACCAAGATCCAATCTTTC
CTCAACCAGATGAACTTTTCCTTAAGACCTGAAACA
[Y]
TGATGAGTCTTGGGCACATGGCTACAATACTTTTCATTGAGTCCCTGAAGGCCATTTT
TACCTCAATGAAATATCATCTAAAGAAAAATTATTTAAAACTCCAGTTGTATAATTTC
AAGATAGTTTAGTGTATTTAGTATGACTCACTCTTCATTAAACTTCACAACTATTTTT
AAAAGCTAATTTAAATAGTTACCTGTTTGAGCTGATCGATGGAAACAGGGCTTgggct
atttctgtaccaccctcagactaagaatgcttttatatttttcgagggGACTGtgca
tcagaggccttctgtggctacacatcttaaaatacttctttacagaaaaagcttgcca
agtcccgAATCAAAACAGAAATCAAAGTTTTAAAGGGAAATCGTCTCTTGTACTCTGC

AATCAATAGCATTTTTTTTTATACATACACACACATAGACACATTCATGCCCCCCCAT
CCCCATCCCACTTTAATCTGGAAGGTACCTGATCTA

>DG8S118, chr8, pos 10923128 in NCBI build 33
Primer pair:
F: TGCAGACAGCACGTTGTAAA
R: AGGCTGGTGCTCCTGAAAT
length: 263
Amplimer:
AATCTTTCCATCCCACAGAATCTTTCCAACATTACAGAATCTATCCANTTGCATAAGC
CTGACTAGGCAATTGACCTTATGAATAAGTCTATAGTATCAAATGATGTTGAAGACAG

>DG8S161, chr8, pos 10925492 in NCBI build 33
Primer pair:
F: CAGCCCAGCAACATTCACT
R: GTGGTAGAGGGTTGCCTTCA
length: 174
Amplimer:
CAGCCCAGCAACATTCACTGCAGATTTTGTAGAGAGCTGCATATCCAAATTCCACCAG
TCTCAAATCAGAAAACAACGCTAAAACAGAGCTGTAGACCGCTCAACTGGATGGTGCC
ATTATAAAATGCAAAATGCCTTTTCCTTTTTACTCTCCTGAAGGCAACCCTCTACCAC

>DG8S127, chr8, pos 10926764 in NCBI build 33
Primer pair:
F: GCAAACAACATGGCTAGCAG
R: TGTTTCTTGGCAAAGTGGAA
length: 403
Amplimer:
GCAAACAACATGGCTAGCAGGTATTAAAACAGCAGACCATGTTCCTGCAGTATTTCAA
GCAAAACCATCTAACTGGGaaaaaaaatttttttaataaaatCCTTCCTCAGTAAATA
CTGCTTTTGAAGTATAGCTATGTTAGAAGAAATAACTTACTAAAATTAGCATGTCTTT
TAATAAGTTAACTTTAGGAAATATTTAGAGATATATTCTAATCTTGAAAAAAGATGTA
AAAAAAAAACTAGACAGTAAAGTCACAGGCACTTTATATCAATGCAGAGGAAAGTTAA
GATCAGAAAAAAAAAAAATACTACCCTACATACAACTACAAAAGCTAAATTGACATTT
TAAATGTACTTTTCAGTTTGCCCTAAAATCTGGACTTCCACTTTGCCAAGAAACA

>SG08S520, chr8, pos 10931667 in NCBI build 33
TTTGAAGCCAGATAGCCAAAATAGGGCAAGCTACATGGTTACAGTTGTTCCTGATCAG
ATGAAATGAACATTTTACAGTTAAAAAAAAGAATGAGGGGGAAAAAAATCCCTGAATT
TTCTCATTGACTTCCCTAGATTTTTGAACTCATTTTTGTGATTCTGTCTACTTCTCCA

TTCACTAAAGTCTTCTAATAATGCCAATAACTGTCTTTAGAATGTTAAGAGTACAAAT
TAGGTAATATTTATATGGCTGGAGGTTCTATGGCAGAAAGGTGCGTTTGACAACTTCA
ATAGTTACTTTGATACTATTGAATACTATGGCACCTATGAGTTTTGGGAGTGGCAGGG
TAGATGGGGATACTACATTTTAGGACACAGCTTTTCATGAGTATATATGCCAGTGTGA
AATCTCTGAAGACTTTAGAAAAATTACTAATAGTGAATTTTTACTCCCATACATTGGG
AAGAGGGGAGTGATTCCAAAATCAACTTTTAGAAAC
[M]
AGCCATATAACTGTATCCATGTATTTCATGCTATGATTTAAGCCTCATACTCCCTATG
GTATGTAAAACTCATACTCATATGTAAGCCTCATACTCCCTATGGTAGTAAAACTTAA
GGCCAGCAGGTAAAGATTATTTCTGCATATAGATGGGATTCTGTTTCTTTGCTGAATT
TGAATGAATAACACCTTACATGGCATAAATATAGAGTAGGATTGCCCAGGTATGAACC
CCAATTTCACTAAAATAGTAACATGAATAATGTGAGCAAGATTACCTCTTCAAATCTC
AGTTTTCACCTTGATATAATAGAAATAACAACAGTGACTTTTCTGAAAAGTTGCTGGG
CAGAGTAAAGGTGGTAATCCTTTCAAGGATCTCAATATGATACCTGATAGGCAGCTAA
GCACTAGAGAGTAACTGCTATTATTATTACTGTTGTTATTATTATGTTTGCATAATAC
TGACATGTTTCTACTTAAATTCTATCGCTGAGTGTA

>DG8S153, chr8, pos 10938731 in NCBI build 33
Primer pair:
F: AAAGTTGCATAGCTTCCTCAGTTT
R: TTAAACCACTGGCTTTCCTG
length: 176
Amplimer:
AAAGTTGCATAGCTTCCTCAGTTTTAATGTTTGAAATGTCTTTTTCTTAATGGCAGGA
ATACTGGGCTTAGAAGTtgtattagttagggctcttccgagaaacagaaTgagagaga
gagagagagagagagagagagagagagaCCTATCACTGCAGGAAAGCCAGTGGTTT
AA

>SG08S510, chr8, pos 10990033 in NCBI build 33
TATTTGAGAAAGGGTGTTGTTGGATCAGTCGGACTTCCTGTCCTGATTGCAGTAGTGG
GTGGGGTGAATTTCCTTCTAGCAGCGTGGAAAAGGGGCATGGGAATCAATGCAGGTGG
AACAGTGGTTCCTGATGTGACGTAGGCAACCATTGGACATTGGGCTTTTTTACATCCT
CAGATTCAAGAGCCTCTTGAAAATGTCTCATTTTGATCATATCGAGTTCTGTCTGTGA
AAGCGATGGCAAGTCTGGGTTAACTAGTGAACTAGTCTAGTCGAGTTAGCTTAAGACT
CTTTCTTATAATGCATGGACATGTAAAAATCAGGAATTTCTTGGTGAAAAAATTTGTT
TCCTTAGAACCAGAACAACCCATAATGCAAACGCATAAAAAAGATTTGCAAATTGATG
TCCTCAGTCTCTCTAGATACATTTCAGGTGTTCAAGATCCACGTATAGCTAGTGGTGA
CCATATTGACATCATGGAAATACCTACTGGGCCGTG
[M]
TGGTTTACACCATACTCTCTGAAACACCGCTTAGGCATTTACCCCATGATTCTGTGTA
TGACTGCTTTTAGTAGCTGCTGCTGCTATTTGCTACCACGAAGGCCGCCTCCTCCTCC
CGTGGTCGGTAGGTAAGTTTAGGTTCTTGATCTCACCACACAAAAGAATTTGAGAGTG
ACTCCAAAGGAAGAGTAGCCAAAGAAGCTTATTGTAAAGCGAAAGTACCCTCTGAGAG
GCTGAGTGGGCTGCTTAAAGGGAGAGACAGCAACTAGTGCCTTCAGAGGAATTCCTTT

TGCGGGAATTGTTCGTATATATTCATAAAATACTGGTGAGGTCAAGTACGTAAAGACA
GACCTGCGGTTGACACATGCGCTCAGCATCTGCATGCTGTAACATGCAATGCATGTAT
CATTAGCATATAAAATCTCCGCCTAGGGGTGTGTTTTTTTACTATTAAAATGAAGAAA
AGGTTACTATGAGCTAAACCTTGAGCCTAGCTGCAC

>DG8S242, chr8, pos 11023805 in NCBI build 33
Primer pair:
F: CTGGAATGGAGGAATGCTTG
R: TCCACAAAGCCATTGGAAA
length: 304
Amplimer:
CTGGAATGGAGGAATGCTTGAATATAGCCAGTTCCATTGAGGTAAGTATTTTGGAAGC
AAAATCTAATGAAACATAATTTTATATTATGACTCAGTGTAGCTCTTCCATTTCTTCA
TTAGATAATTTAGTCATGTTCTCTGACTCAAATACTGAAGACTGATAGGAAAAGCCTC
ACCCTGGTTCATCGTCATATGAGTGTAATGGAACTTTCTTGACTTCCAGCAGTGTCTG
GTGTTACTCACGTTATATGAGTAGCTCAATTCCATGAGTTGCTTGGAATTCCATTTCC
AATGGCTTTGTGGA

>SG08S90, chr8, pos 11028406 in NCBI build 33, alias name,rs2736387
tgccagacactgttctaagcctttacacacattatctctcttaatgcttcaacaaca
ctatgaagtaggtatgttatttcccccattttacagttgaggaaactgaggcatagag
tggttacatgactttcctactgcactgctaggatttggaatttcagtccggcattctc
attcccatctgactgtagacctctaggctgtaTCATCCTTTTTTACAGTTACTAACCC
ACCCTGATTTCAAATAATTTACATAAGTTTATTTAGGTAATAACTGGATTTTGAGCCA
AGACCTTACTGACTAGCCAAAAACTGATCCCCAGAAATACTTAGACCTTTTTATTAAG
CTTTATTAATTGATGTCGAGGTGTTATTTCATTTTTCTTCTAGAATTGGTATGCACAT
TTTTTTGTTCTTTTTTTCATCCCGTCAACACTTTTGAGTGTGTGTTATGTGGCAGATG
CCTTTGTTAGATACTAGAAGCAAAGAAATCAGCTTC
[M]
GTAAGACTAAAATTGTATCTGGTGATAAACACAATGTTAGAGAAACATTCTGGGTGCC
CATCATTATTAGACCATGTTTGCTTAATACTAATTTGTCAGTTAGAATATGTTTCCAG
TTGTGGATGTTTCTTTTTTGTCTTTCTTTTCTTTTTGCCCCCAGGCATTGTCTACTCT
GGACTCCATCACTCTGATGTACCCTTTCTTTTACCGTCCTATGTTTGAAGTGATAGAA
GATGGCTGGCATTCCTTCCTTCCTGAGCAAGAATTTGAACTCTATTCTTCAGCTGTGA
GTTAACTTTTGAGAACTGTGGATTATGAGAAGTAACCCAATACCTTATTTGACTTGTG
AAAATGATCACTTCTTTTGAAGAGTAATAAGGTGAAGTTGACTTATCCATTCCTAATc
ttaatatatttaaaaggattgaagccatgcagagtatgatctctgatcacaaaggaat
tagattaataatcagtaatactaagatatctaggaa

>SG08S32, chr8, pos 11048161 in NCBI build 33, alias name,rs2251473
AATTAGAAAGTGGTTATCAAACAATGTAAATAATGAAGACCCTGGGGGTCTTTCCAGA
CATTCATATTTGTAAGCTATCCTGGTTGTTTCTGCACAACAAGCCCTTTCTTAAAGAA

ACTAGAAAAATAAATAGGACATAAATGTCAAAAAGTGTATAATTTTTATGTTTATATT
ATAGGCTTCTCAGAAACAAAAAGGTTAGAAAGTTTTTTTATGCTTAGCTATTTTTAAT
TAAAATAGAATCCCAAATATAACAAAGGACTTTTGTGTACAGTAATGTTCTCTGGGTT
AAGGTTTAACACCAAACCTGATGTGACCAGATTCTGTTTTTATCCTCCTGCCAGCTTC
TTGGAAGCCTGTAAAATACTCTTTGTTTTGTTGTTGTTGAGAGTTCTAATGCCGATTG
AGCTTTTTGACAAATCTATTGATTTTTCAACACTTTGTTTCTCTACCAAAAGTCTTGT
ATTCTATCTTCTTTCATACTGAGAAGAAATTGTCCT
[M]
GTAAGAGGAGCACTCAATAATGGTTGTTATAAATTAATTACTTTAATGGCAGTGTTCT
TTCTTGATCAGATGTAAGTTGAAGCTACAGCAGAAGACGATGTCTTTGTGGTCCTGGG
TTAATCAGCCCAGTGAGCTGAGTAAATTCACCAATCCCCTCTTTGAAGCCAACAACCT
TGTCATCTGGCCTTCAGTTGCTCCGCAGAGTCTTCCACTGTGGGAAGGTAAACCACGC
ATCCTTTGCAAACTTCTTAACGGTCAGGTGTGCATGCGGCTGCCTGTGAGTGTGTGCT
GTTGGTGATGTATGAAGATGGTGAGCTGGACGTGGCCCTCAGACCTGTGTGAATTGTC
ATTCTCAGTGTGGGCATGTTTTTCTCTTTCAAATCAGTTATCTAGCCACACTTTTTTT
TTTTTTCAGTTACCATTGAGAAATTAACAGTGTTTCTTTACATTGCTGTTTATGTTGG
ATATTTTTCTAGATAAGAAAGTACCTTACTCTTTGC

>DG8S156, chr8, pos 11054915 in NCBI build 33
Primer pair:
F: GGACCAGAAATGGGCAATAG
R: CTCTTCAGTTCTGAGGGTTGC
length: 153
Amplimer:
GGACCAGAAATGGGCAATAGTTACAATAGTTGATCCTCTGTTCTGGAAGCTTTGAAAT
TTATCAGAGAATGAAGTCATTCAGTACATCTGATAAAGTTttgttgttgttgttgttg
ttgttgttTTAATTGGGCAACCCTCAGAACTGAAGAG

>DG8S147, chr8, pos 11071336 in NCBI build 33
Primer pair:
F: AACGGAGAAAGAGGGTGTCC
R: CCCTTCCAGTTGCAGGAGTA
length: 382
Amplimer:
AACGGAGAAAGAGGGTGTCCATAGCCTACAGAACTTTCTCTCAGAACTTCTAGGTcag
tgctgttctttgggaatctaatatgagccacatatataatttaaaaatttctattaat
cacacaagagtaaaaaaaacaggtgaaatgaattgtaaNtgttttatttaacttacct
tactaaaaatattttccatttaacatacaatatgaaattcattaacggatagtcacat
ttttaaacgccatatcttcaaaatctggtgtttgacagcacatttcagttcaaactag
ctacgttgcaaggatttaatagccctatgtggctagtgactattgtatggaacaTTAT
CGTTCTAGACCCTCTACTCCTGCAACTGGAAGGG

>SG08S511, chr8, pos 11077298 in NCBI build 33

TCTAGCTTTCAGATCATCCCCACGTAAAGTTCAGACTTTACCAGCCCAGAGAGTTTAA
AAAAAAAAAAAGAGAGAGAGAGAAAGCGAATGTGGATTGAGCCTTTACACTGACCGCG
CAGTTTGCACAGTGCTTTTCATAGATTGACTGCTTTTATTAAACGCTCTCAACAGTCT
ATTAGGATGGCATGGTGATTGCCCCCTTTCTGAGGACGCGGAAACTTGAGATTTGGCG
AGGCAAGAAGCCAGGCGCACACAGCTAGGCGGGCCGCGGGCCGCGACCCCCTGGCTGG
TCCGTGCTCTCCCCCTGGGGAGGGGTGCAGGCTGCCAGGAAAGGTGCCCCCTGCGTGG
CCCTGGGGGTGTTTCTTCCTCTTTGTCTCTTCTTAGGCATCTGATCTCATCTCTTAAG
TGGGAAGAGTCGGGGTGGTGGAAGTAGAGGGTATGGGACACGGTGGACCTACCTCACT
TGGTAGTTAGTAACTGCCTCACCTTGGGCGGGTCAG
[Y]
GGATTCTGAACAATGGGGAAAAGGTCCCAGCTTCAGGGTTGCTGTGAGGGTTTAAGAA
GAGTTCAGGAAAGCAGATGCTTCACCAACGCTCCGTAGTTACCAGGCGCCTGATTTTT
CCTTGGATCATTACTATTAAGAGGATGCATTGGTGATGATGATGATGTAATGAGTCAG
AGGTTTTAAAGCCCAGACTGCCTTGAAAATGCGTCTGGTAAACCTTCTTGCTCCTTAA
AGCAGAATAAGATTGGAGTGGGGGAACGCAGTGAAAATGAAGGTGGGCATGGACATAT
AAGTATTAAGTTAGAAGTGGGGAGGGGGCAGGGGGCATTGGCGCCAGGAAGTTGTAAA
CTGGGCAATTATCACCCAGTCCAGAGCAGGGAAGGCCCGTTGTGAGGGGCTAGGCATG
AAGGTACCAGCAGCGTACATGCTCCTGCAGACCCCTGAGGCTGGAAGGAAGGAGCGGG
CAGTGGGAGAGTAATAGGTTTAAGCACGTTTGCAAG

>SG08S512, chr8, pos 11077399 in NCBI build 33
TTTACACTGACCGCGCAGTTTGCACAGTGCTTTTCATAGATTGACTGCTTTTATTAAA
CGCTCTCAACAGTCTATTAGGATGGCATGGTGATTGCCCCCTTTCTGAGGACGCGGAA
ACTTGAGATTTGGCGAGGCAAGAAGCCAGGCGCACACAGCTAGGCGGGCCGCGGGCCG
CGACCCCCTGGCTGGTCCGTGCTCTCCCCCTGGGGAGGGGTGCAGGCTGCCAGGAAAG
GTGCCCCCTGCGTGGCCCTGGGGGTGTTTCTTCCTCTTTGTCTCTTCTTAGGCATCTG
ATCTCATCTCTTAAGTGGGAAGAGTCGGGGTGGTGGAAGTAGAGGGTATGGGACACGG
TGGACCTACCTCACTTGGTAGTTAGTAACTGCCTCACCTTGGGCGGGTCAGTGGATTC
TGAACAATGGGGAAAAGGTCCCAGCTTCAGGGTTGCTGTGAGGGTTTAAGAAGAGTTC
AGGAAAGCAGATGCTTCACCAACGCTCCGTAGTTAC
[S]
AGGCGCCTGATTTTTCCTTGGATCATTACTATTAAGAGGATGCATTGGTGATGATGAT
GATGTAATGAGTCAGAGGTTTTAAAGCCCAGACTGCCTTGAAAATGCGTCTGGTAAAC
CTTCTTGCTCCTTAAAGCAGAATAAGATTGGAGTGGGGGAACGCAGTGAAAATGAAGG
TGGGCATGGACATATAAGTATTAAGTTAGAAGTGGGGAGGGGGCAGGGGGCATTGGCG
CCAGGAAGTTGTAAACTGGGCAATTATCACCCAGTCCAGAGCAGGGAAGGCCCGTTGT
GAGGGGCTAGGCATGAAGGTACCAGCAGCGTACATGCTCCTGCAGACCCCTGAGGCTG
GAAGGAAGGAGCGGGCAGTGGGAGAGTAATAGGTTTAAGCACGTTTGCAAGTGGAGGC
GGAGAGAGGACAAGGGCTGGGGGGGTTGGAGTTTGCTGGGTCTCTGGGGGCAATATTG
ATCTATGTTAGGCGAGTTTTCTCACTCTTCAGATAC

>SG08S27, chr8, pos 11086652 in NCBI build 33, alias name,rs2249804

TGGTTTCTCCCTGCCTCTTTTCCCTTTCATATCCCAGTCCACTTCTAATGGAGGATGG
GATTCTGCCTCATGTCACCAGAGGTGGATATGAATCTGTTCATACTGGTTTTGAATGA
TTTTGTCACCCATAGCAGATAAGCTTCAAAGTTCATGAAAATAATGAAGGCCAAGATT
GAGTTCCTGCCCCAAGAAATTCCAGACCTGTGTCTGGCTTTCATGAGATTTTTCTCTT
CTAATGCCCTTGCTTCTCCTCTTTCTCGGAACCACTCCATGCTGGTAAGTGTTGTCTC
TGAAACGAATGTTACCTGTATTGGTCTCTGTCCTAGCATGGGGGAGATCATTGCATTT
CTAAGCGCTGCACCACGTTCCTGGGAAGATTGGAAGTAAGCAGCAGTTATATCAGTGC
AACCTAGGACTTACGTAGTTAGCTAAGACTGAAAACTAGTCTCACTCAGTTATTACAT
TCTGGGAATAATTGAACTGTTTAGATTTGCATTAAA

[S]
CTTCACTTTTTTTTCTTCTTCATCTAGGGGCTCTTGGCCAGCTGGGAGTGGGGCTTGC
TAATCTTTTGAGGTAAGAGCCCTAAAAACTTGAAATTTAAAATCTGAGTTGTTAAGTA
TATGGAGCTCATTGGGATGCCTTTTAAACTTCTTTTCTCTCTCCTCTTGCTCCTTACC
ATTGTTAAGatatatctaaataactgctatatatagctatagatatagatatatagag
atatagatatagatacagatttttttttttgagttggagcctcagtctgtcacccag
gctgtagtgcagtggtgcaatcccggctcactataacctccacctcctgggttcaagt
gattctcctgcctcagcctcccgagtagctgggactacaggcacataccaccacgcct
ggctaatttttttatttttggtagagatgggctctcgctatgttgcccaggctggtc
ttctaactcctggcctcaagtgatctgcccgcctca

>SG08S26, chr8, pos 11090369 in NCBI build 33, alias name,rs2246606
AAAGGTCCATTTAGTTCACAACCCTTTTCACGTTCGTGGTTTCAATTTATGTTCCTTG
CAGGTCCATTCATTTATTCTGATATCTTGGATTACAAGAATCTTCGGGAGATCGTGGT
AAACAACCGCATCACCTGGCTGTTTCATTACAGCGCTTTGCTCAGCGCCTTTGGAGAA
GCAAATGTTTCCCTGGCGAGAGCAGTGAATATAACTGGTAAGCATCTGGCTCTGGCTG
GATGTGATTTATTTGCCAGTTTTTCTAGTTCTTTAAGAAGAGATGTTTTCAGATTCTG
ATAGTGTCTGTTCATTTCAGGCCTGCATAACATCCTGGATGTCGCTGCGGAACACAAT
CTGCAATTGTTTGTGCCTAGCACGATTGGGGCTTTTGGACCCACCTCTCCCCGGAACC
CAACCCCCGATCTCTGTATTCAGAGACCCAGGACCATCTATGGGGTGTCCAAGGTCCA
CGCGGAGCTCATGGGAGAAGTAAGCATCACTCAGCT
[R]
GATTGCTGAATGTGCCCTGGCTGTCACGATTTGCTGTTTGCTTTCTCATTCGTTTTGC
CTCCAAGGCCTGGTGATTCATCCCTGGAGGAACTTTACCTCTTCTTGGATCCCAGCCC
CAGAGTCGCTTACTTAACTCACTGGGTTTGCCATGTAGCAGGTGTCTCCAGCTCCTGA
AACCTCCTCAGCCATATGGGAACACTCAGCACTTCCTGGGTGCCCCGTGCCCAGCCCC
GATCTCTTCATTTGCTGCTTGTCTTGTACTCCACCATTCTTTCTGGCTCCTAGTATTG
GTAGCCATTGGTAGTAACTCTAAAACCTCAAACATCTTGGGtttgttttgtttgtttg
tttgttttatgagacagaatcttgctctgtcacccaggctggagtgtggtggcgtgat

ctcagctcatagcagcctccgcctcctgggttcaagggatcctcatgcctcagcctcc
gaagtagctgggattataggcacgtgccaccacacc

>D8S265, chr8, pos 11150773 in NCBI build 33
Primer pair:
F: ACCTCTTTCCAGATAAGCCC
R: CCAATGGTTTCGGTTACTGT
length: 213
Amplimer:
ACCTCTTTCCAGATAAGCCCTTGAGGTCTCGGGCTGACCTACACACACACACACACAC
ACACACACCCCCCCCCCACACACACACACGACAGAGAACATGCCATAAACATCCTTGAA
CCCATGCAGGAAAGCCCATCCCATATTCTGAAAAAATGCCAAATTAGGTTTTTCTTTC
TTTTTGGAAATCAGTCATTACAGTAACCGAAACCATTGG

>D8S1695, chr8, pos 11220756 in NCBI build 33
Primer pair:
F: AACCCAGCATCCTACAAAG
R: CATCTGGAACCCATGAG
length: 273
Amplimer:
AACCCAGCATCCTACAAAGAAAATACATGGTCTGTCTACCCAAGGTTAGAGTGGGAGG
GGATGTGAGAGTTTGCAGGGAGGTGTGCTGGCCCTTATGTGATCTGTGATAAGACATC
ACCTTTATGCCCACCCCAACAGACAGAGGTTGGAAAATAACAATACCAGacacacaca
cacacacacacacacacacacacacacacacacacacacGATTCCAGCAGCCACTCAG
AAAGAAAACAAGGAAATGACTTTGCTCATGGGTTCCAGATG

>SG08S46, chr8, pos 11234300 in NCBI build 33, alias
name,rs2280804
AGTATCATCCTTCACAAAGTTCTTTCTATTCTTTCTACTGTACAAAGTTTTCTGTTGT
CAAATAGCAAGAGATCTCTGTTTTCTACTTGGAATGGGCCTGGAGAAGGGAGACAGCA
CCCGCTCCCTCCACCCCTTGTCCCTGAGCACAGCATGGTGACCTGCCAAGCCAGAGGG
TGACCTGGACACTCATAACTCAATGCAGGGCCAACTGTAGCCTCTGGCCGGTGTCCCT
GAGTGAGGGCAAAGTTGTAATAACACTTGTTCTCTCCTTTCTCCAATTTGCTCCCAAG
CTCCATTGCTTTCGTTCAGGCCCTCCCCCTTCTAGACTGGGCAGTTCCGCATCCTTGG
AGCTCATTTCTCTGTCTTCAGAATCTGATGCTCCAATTCATCCCATGTGTGGCTGCCA
AGGTCTTTCTAAAACTCAAATGTGGCCCTATCACCGCACAGGGTAAAGCCACCATAAA
CTCCTCTGTGTTTGAGAACAAGGGCCAAGTCTCCCA
[Y]
TGAGGCCTCCAGGGAGTGGACAGTCTGGGTCTCCTTtcttctccaagcacgctgggcc
catctgtcctgtccctgaggactccctggcacacatgacacttcagagcttttgccaa
ctccactccctgcctgaaatgcccatctccttcagagagcttctatgtatccttggag
gtccagtcctaatgtccctgcctccgataagacctctccccatcttccTCTCGCCCTG
CTCCTGTCCCCGCCAGGCATGACAAATCTCTTCCCACAGTGGGCCCAACAGGGAGGCA

GATGGTAGAACAGGTTTTGGGCCAGGTGCCAGGTGCACGTGGCTCTTCATCCTGGTTC
CCCACCGCACACCTGGAGAGCTGAGTGCTTTTCCTGAGGTCACGCAGAAGGTTACCAG
CCTGGCTCTGGAGCTGTCTCTTTGCCACATCGTGGGGTGTCTTTAAGGTGACCTTGAA
TGTGCTTGAAGCTGTTTTATGTCCTATTTGCAGACC

>DG8S130, chr8, pos 11239181 in NCBI build 33
Primer pair:
F: CTGGGAATCCGAGATTGAAA
R: GGCCATAATCAAGGCAGAAT
length: 288
Amplimer:
CTGGGAATCCGAGATTGAAATGAAAGAAATCGAAAGATCTTTGCCTACATACAGAGGT
CCAGTAATGGGATAGGGAATATATTATCCccgggatagcgccactgtactccagccag
gatgacagagactccatctcaaataaataaataaataaataaataaataaataaataa
ataaatacataaataaaGTGCCTCTTTGTTAAGGCAGTTGCTTCTATTTCTACTTTTT
TAACCAAAGCTAATTGCTAATGTGTTAAAGTACGAGATTCTGCCTTGATTATGGCC

>SG08S35, chr8, pos 11253693 in NCBI build 33, alias
name,rs2252797
aagatatgaggaaagagaaagggcatgagcaaaggacattttgcagcatgtttatga
tcttgagaaaatggaaacagctggggtgtgcggcagaagaagtggggaaaatgacaac
ggttcattaaacctcacgatcagatgctgacagcccctcacaggttgctgcagacaaa
acagggaacgacaggaaaaagatgaccgtgatacgctctgctaaaagcaggtcgcaaa
acaggatgtagataatgatcccattttgctttttacaaaaaaaaaaaaaggccatgg
aaaattacatatcacgaatgttcagagtggctgtctctggatgatggcattggagtta
attttatctttcactctattttctgaatttcctatatCAAAAGCAAATTGATGGTGTG
AAGGGGAAAGCATATTTAATGTGATTCCTAAAAGGCTCAGCCCTCCCTGCATGGATTG
AGCACTGAAAGAAGAGGGTTCTGTCACCTCTTTCGT
[S]
CTGACCCTTGCCTTTTCTAATGTTGCTCAGAGGCACACAGACGTATTTGCTTTAAGTA
ATTGCTTGTCTGTTTTTAATATCACATTTTGAAAAGGTATTTAGACAACATGAGTTTA
TTACTTTCTGTTTAACCCAAATCCTTCAGAGGTACTTAAAGCAAAATGTAAAGTCCTC
TTATCCCTTTGTGaatttcagtccccagaagtctcactgttagtagtttgatttttac
caaaaatgtccaggtatttttcttttcatctgcaaatgtgttaatagactccttttttt
aaatttcacacaagcaggattatatcatacaaaacattctgcaatttactcttttcat
gtaacaataatgtatcctgggtatttttctttgccagttcagatctcttttatccttt
tACTAATTTATTTACCTATCTATTCATTTGCTTAACTTGATTTTATTATTATACAAGT
TATCCATGAATATTGTTTTCAAAAATTTAAACAGTC

>SG08S139, chr8, pos 11282021 in NCBI build 33, alias
name,rs936550
atacacatgcaaacacatacacatgtccacgcatgcacatatacacacacacgcacac
atatacaTGTGCACATATGCACAGATGCAATGAACACGTGTGCAacacatgtacacac
cttacacgtacatatgcacacacacacacaACTCCAAAGCAAGACCCCTCTGCTTCTC

CGAGCCACAGCAGTGAATGCAAGACAGGGATGGAAGCAGGGGAGTGAGTTCTACCCTT
CGTGGCCTCCGGGGTGTCCTTGAGCCTCTCAAGCCTCAGTTTACTGGTGTCTATGTGA
GGATAGACTAGTTTCACAGCTCAAAGGCAGGCGGTCCTTCAGTGCTGAGAAATCTTCA
TCTCAGAGCCAGGCCCTGCCTGCCCAGGGCAGTCCAGACATACCAcagaggcagggga
tccaggttttgtgaaactgaagctgataggatctgaggtcgtctttacaaaggacacc
aaattgtcagaagccatcagggacggggcctcagag
[M]
agccaggcaagtgaggggtctaaagcaccagcttGGGAAGCGTCACTGCGTGGAGAGC
GGGCTCCTGGGCTCATCGCCCGAGGCACCCGACACAAGTGCAGCCTACAAAATGGAGA
GAAAAGCCCTTGATGAATGAACTCCCTAAGGCCAGGCTCGGGTTCCTTAGAGACTGGG
GGCACAGCTGCACCCGGGCAGGGTCGGGGAGACAGTTTGCAGCCTCTGGGCTGAGGCT
GGGGTGGGGGTGTGGAGGGGCTGTGGCAACAGCATGGCGTACGCCTCTGGGTGTCCTT
TTGCAAGTAGGTGATGAGAGAGGCACATTGGCTGAGGGAAACTGGAGGATGGAAGGGG
GTTGAGGCAGGGGAACTGACAGGAGAGGAAAGAGCCTTAAGTCAAACAGGACCGCGGA
AAACCAAGCGTCCACAACGAGAACGAGGGGTCCGTGCCTGACCCCTGGCGGGGAGGCG
TGGTACTGCTCGAGGTAGGCGCGGACTCGGGGAACC

>DG8S170, chr8, pos 11287781 in NCBI build 33
Primer pair:
F: GCAGCCTCTAACCACATGCT
R: CTTTGCATGGCTTCCTATGG
length: 380
Amplimer:
GCAGCCTCTAACCACATGCTGACCATGCCAATGGCTCTCTAAGcacacatgtacacac
acacactctcacacacataaaaacacagactcacacacacacggacaaacacaaacac
atacacagactcacacagacacgcaaactcacacacagacagacacacacacagacac
acagactcacacacacaaactcacacagacacacaaatacacaGACTCAGACTCAAac
acaaactcacacaaacacatttacacaaactcacaaactcacacacacaaacacacac
acaaacacgcaaacttacacacacatgagcagacacacacCCGGCCCTTCTGGGCTCT
TCTTTTCTTACTCCATAGGAAGCCATGCAAAG

>DG8S261, chr8, pos 11303006 in NCBI build 33
Primer pair:
F: GAATGGGCACATCCATAGGT
R: CGCCCTTCCTTATCCCTCT
length: 257
Amplimer:
GAATGGGCACATCCATAGGTTCTGATTTTGACACATGGCCAAGACTATCAAGTGAGGG
GAAAGGGTGCAGAAAAACACATACATGCAGCATGATGTacacacacacacacacacac
acaATTTTATGTTCATCACACACATGCATATTTGTGTAAACATGCAGCAAAGGGATCC
CAGTGATACCAACCAAAGAGAGCCCCGTGACCTCCGAGGAGGGAGCGGCTGGGGCTGT
CAGCGCAGAGGGATAAGGAAGGGCG

>D8S1759, chr8, pos 11348674 in NCBI build 33

Primer pair:
F: GAGACTGACAATCTCCTCGTCTTAT
R: CTATTGCCTAGCTTAGCACATTTGA
length: 125
Amplimer:
GAGACTGACAATCTCCTCGTCTTATCCACGTTCTCACTCCAAATTCATTAAGTTAAAT
ACACACACACACACACACACACACACACACACACTAAGACAGTTTCAAATGTGCTAAGCT
AGGCAATAG

>DG8S117, chr8, pos 11350993 in NCBI build 33
Primer pair:
F: CCTAAGCATTTCTTGGCTTCC
R: CAGTGAGAGCACCCTACTTTGA
length: 153
Amplimer:
CCTAAGCATTTCTTGGCTTCCCCCAGGTGCCCTGTTTTTGAATTAACCTGAGATTATG
GCAGACCACAAGGGCTGCATCACACCAAGTTCTCCCCAAGATTTGCCATATTTCCTCT
ACCACCAGGTGGGGTTCAAAGTAGGGTGCTCTCACTG

>AC022239-5, chr8, pos 11355629 in NCBI build 33
Primer pair:
F: TCCACAGCAGGGTTCAATAA
R: CCCACTCATCCATCTATCCA
length: 275
Amplimer:
tccacagcagggttcaataagtgattgctgCTCATTACCTAGCTATACAGGTAGATAt
ggatggatggatggatggatggaaggatggatgatggatggatggaaggatagataga
tggttggataggtggattgatagatgatggatggatggatggatggatggataaatgg
ataaatggatggatggatggatggatatctggatggatggataaatggatggatggat
ggatggaTGAATAGATTATtagatggatagatggatgagtggg

>DG8S181, chr8, pos 11390001 in NCBI build 33
Primer pair:
F: GGCTCGCTCCAGCTTTATCT
R: GGGTGATGCATAGCAGACG
length: 268
Amplimer:
GGCTCGCTCCAGCTTTATCTGCCTCTTAGGTGTGACCAAATTGTCgtgtgtgcgtgtg
tgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtgtTGGCTCCAAAGGTTTATTCACGAAT
AGATCCCAAAGAAATGTCACAGAGAAATAGTGACTTGAAGTCCAAAGAGGAAAAAAAG
GGAGGCCGCAGGCACATGATGGATCTGTGCAATAGTCATACGTAAGCCGCCGTGATGT
CCACACCACGGAGACCCCGTCTGCTATGCATCACCC

>SG08S97, chr8, pos 11410417 in NCBI build 33, alias name,rs2898291
AAAAACTCCTGGCAGACCCTTCCGGGATCACGCGTGGCTCAACTCGGGGGCCGTAGCT
ACGATCCCCGCGCAGACGCCGGAATccggggcccggtccccgcgcggggtgcggcgct
cgcgggggggggggggggggATGGGGTCGGTCCCTCTCGGGAACGGCTGCTGTTGTTTC
TTTAGATACTGAATATAATTTCTCCCTCCTCCACCCCACTCGCTGTTCTTAACAATTT
TATTTATTGGTTTACTATTGTCTTGTGAACGTTTCTTGTCTCCTCCTTGCCTTTTTTC
ATCCCCTTTCTCTCTTCATTTCTCTCTTTTTCCTTAATTCTGTTGCAAAGTTTCCTTT
TCTTGCTTAATCAAAATTCTCCCCGCTTACTTTGTTCTTTGCCCACAGCATTCGTTCT
TCTTTTCTCCTTGCCTGCCTGTCTTCTTTCCCGCTGTTCTTGGCCGTGGGCAGACCCG
GCTGATGTAAGGACTGCAGCTTTTCCCTGGCATACT
[M]
TGCGCCTTCAGATGTGGTCTGCGTCTGCCTGGGTCTCTTCCCACCTCAATCTGAGATC
CTTGCCCCTCACAATAAATTCGTTTTTATTCATTCTGATGTTTGTCTACAGAAGTTAC
TCGATAAAGATGTTTTGTTTCATGAATCAAAAGGCTTCTTGTCTGTGAATTATTTTAA
TTTCTGGATATTAAACTGCACAGTAGCTATTTTATTTGCCTTTAATAAATTTCTTAGG
TTTTTACCTCTAACTAATGGCACATTTTAAATAATTTTCCAAGCACTAGGTGGTGTCT
GACAAGATTGATTCACTCAAAAACGATGCAGAATTTCTTAAATGTAGAATCTTTTAAA
ACGGTGTCGGATGGCTTCTCCTGCTACATCGTTTATTTGTAGCTTCCACTAACTCTAA
AGATTGAACAGGAAACTGATATGGTAGAAATAGATAACTTTGCCTTGTTCACTAGCTA
AGATTTTATTTGCTTTCTGTTAGATCACAGTAGTGC

>DG8S163, chr8, pos 11458431 in NCBI build 33
Primer pair:
F: AATTCCTGGATATTCCTACCACTT
R: GATCCTTACTCCAGCCCACA
length: 359
AATTCCTGGATATTCCTACCACTTACTAtttgttgtcgttgtttctattgtttttgag
agaaggtcttgctccattgcccaggctggagtgcagtggcgtgatcatggctcactgc
agtctttacctccagggttcaaggaatcctcacacctcagcctcctgagtagctggaa
ttactaccatgcccagctaacgtctatatttttttggaggtagggttttgccatgttgc
ccaggctggtcttgaactcatgagctcaagtgatactcctgcctcagcctcccaatgt
gctgggattacaggcataagccatcgtgcctggccTCAGTGAGTGGTTTTGTGGGCTG
GAGTAAGGATC

>DG8S221, chr8, pos 11473774 in NCBI build 33
Primer pair:
F: AGATCACGCTCCAGGGATT
R: TCCCACACTACACTGATGTAAAGAA
length: 390
Amplimer:
AGATCACGCTCCAGGGATTCCTGCGTCCTTTAATAAGATTCTGGGGTGGGCACAGTTC
TGGGGTggacatggtggctcacgcccataatcccagaactttggaaggctgaggtggg
aggatcgcttgagcttaggagttcaagaccagtctgtacaacacagtgagagcttgtc

tctcccaaaaaaaaaaaaaaaaaaaaaaattagcaaggcatggcagcatgcacctg
tagtcccagatacttgggaggctgaggtgggaggattgcttgagcctaggaggttgag
gctgcagtgagccgagatcgcagcactgtactccagcctgggggacagagtgagaccc
tgtctcacaaaaaGTTTTTCTTTACATCAGTGTAGTGTGGGA

>SG08S76, chr8, pos 11477186 in NCBI build 33, alias name,rs2409814
gggaggcagaggttgcagtgagctgagatcgcaccattgcactctagcctgggcaaca
agagtgaaactccgtctcaaaaagagaaaagaaGTCTCACAAAGGgctgggcacagtg
gctcatgcatgtagtctcagcactttgggaggctgaggctggagtatcgcttgagccc
aggggttcaaggctggactgagttatgactgcaccactgtactccagcctgggtgaca
gagtgaccctgtctctaataaaaagaataaaataaATACAGTCTTACAAAGGATACAA
TAGAACCAAATGCTCAAAACATTAGTGACAATCTGGATTTTCTTTATATATTTTGGCA
CTAATTTTCCTAAGGTAAATATTTATTATATCTTTATGCAAAAGGAAAAGTAATCTTA
CTAACTTTGAAAGGGAAAAAGAGAGAGCAAGGTTTGCGTGGACCTCAGTGTGAGGTGA
GAGGCCTAGGGCTGGAGGCTCTGAATGTGATACCTG
[S]
ACTGAAATCCAGGTGTCCCGCCTCCCAGCCCAGGACGTGGGTGATCACTGCAACTTTT
TCCTCTTCTCGTGCTCAGGGGAACTCTCAGTGTCTGGGATTAGGGAGCAGGGGCTGAA
GTCAGAGTGAGGAAGAGCAAGAGCAGCCCGAGGTGGTCTTCTCTTTCCAAGGAAAGGG
CATTGTTTCTGTGCGCTCTAGATTCTCAGATGTGAGAGCTGGGCATAAACAAAGAATT
AATCCTCTGTGTCTTTTCTTGTCTGTTCCCCCCAACTCAGTAGATATGTTTGACGACT
TCTCAGAAGGCAGAGAGTGTGTCAACTGTGGGGCTATGTCCACCCCGCTCTGGAGGCG
AGATGGGACGGGTCACTATCTGTGCAACGCCTGCGGCCTCTACCACAAGATGAACGGC
ATCAACCGGCCGCTCATCAAGCCTCAGCGCCGGCTGGTAAGCACGTGCCTCGCAGCCT
CCTCTGGGCACCTGGCTGCGGAGCTCTCGCCTTGGT

>DG8S292, chr8, pos 11509365 in NCBI build 33
Primer pair:
F: TTCTGGCCTTAGGAAAGTGC
R: CCAGACCACAGAAGCTACTCC
length: 424
Amplimer:
TTCTGGCCTTAGGAAAGTGCTAGCTGAGCTGAAATCTCATGAATGttaggtcgtttgt
gtacttcttatcaatgtaatgaagcttttgcacagaaagtctgtttgtttttgtgaca
tgtgttgccagtattgtttcaagtctgtcctctgtcctttgattgtgcttatgatgtc
tcttggcatttgggattttaaatttttatatcatcaacggtgggtatttttcttggtt
gcttgtaggtttccccttttgctaaaaaaaggcccctctgcccccagagaaagtcac
atgccttctattttctgaagttttataacttGTAAAAATGTTTAGAAGTGTAGTCTTT
ATTTGTGTGGCCTGACGTAGGTACCATAGGATGCTATGGGCTGTAAAAATAACTCGGA
GTAGCTTCTGTGGTCTGG

>DG8S333, chr8, pos 11607597 in NCBI build 33
Primer pair:

F: GCATGTGAAATTGGACTTGTACTC
R: CACTGCAAGCCTAGAGAAGGA
length: 292
Amplimer:
GCATGTGAAATTGGACTTGTACTCCAGAGATATCCATGTTTGTATTCATGTAAAAATA
ATGTCCTTCTTaattatctgggggtggtggtgtgtgcctttagtgccagctacttgga
aggctgaggcaggagaatcacttggaccaaggaggcagaggttgcagtgagctgagat
cgcgccattgcactccagcctgggtgacagagagagactctgtcccaaaaaataaaat
aaaataaaaataaatacataaaataaaataaaataaaaGTCCTTCTCTAGGCTTGCAG
TG

>D8S1130, chr8, pos 11704969 in NCBI build 33
Primer pair:
F: GAAGATTTGGCTCTGTTGGA
R: TGTCTTACTGCTATAGCTTTCATAA
length: 145
Amplimer:
Gaagatttggctctgttggagacagactcatagatagatagatagatagataga
tagatagatagatagatagatgatagatagatcttatttaaaagtttattaact
tattatgaagctatagcagtaagaca

>AC068974-2, chr8, pos 11824194 in NCBI build 33
Primer pair:
F: TGGGAGATTTCAGCCTTTCA
R: TCAAAGACCAGTGCCAGAGA
length: 352
Amplimer:
tgggagatttcagcctttcaaaaaaatataatgtcttgtactatggattttcctggag
tgaaagagaagaaaatctcttttggctcatctcttttttactcctacacacacacacac
acacacacacacacacacacacacactctatatgatagattataacagatgtatcttt
caaaagtagaactgaaatttagacctaaaagataatatactttaattgttagagagga
tatttttcctgttgaagggaacaatattcctatgtgtttaatacacaaatatatctgt
gccAGTACTTGTTACCCCCTGAGACTTCACACACTACTTATATCTCTGGCACTGGTCT
TTGA

>AC068974-2, chr8, pos 11974598 in NCBI build 33
Primer pair:
F: TGGGAGATTTCAGCCTTTCA

R: TCAAAGACCAGTGCCAGAGA
length: 352
Amplimer:
tgggagatttcagcctttcaaaaaaatataatgtcttgtactatggattttcctggag
tgaaagagaagaaaatctcttttggctcatctcttttttactcctacacacacacacac
acacacacacacacacacacacacacactctatatgatagattataacagatgtatcttt
caaaagtagaactgaaatttagacctaaaagataatatactttaattgttagagagga
tatttttcctgttgaagggaacaatattcctatgtgtttaatacacaaatatatctgt
gccAGTACTTGTTACCCCCTGAGACTTCACACACTACTTATATCTCTGGCACTGGTCT
TTGA

>DG8S250, chr8, pos 12427095 in NCBI build 33
Primer pair:
F: TCCATCCCAACTCAAGATCC
R: AGCCTGGTCTCTACCATAAGC
length: 405
Amplimer:
TCCATCCCAACTCAAGATCCCAggtaacaataatacctgcttcttgatataaggattc
aacaatttttttaaagcgctgagaccatgcctgttacatagtaggcacttaacacacgc
tgattatttacatctaaatcttcacaaccaccctaagaagtacatgttattattccca
tcttacaatagagaaaataagctcagattaattaattttcttgggtcttacagcaagt
aagtgatggtactggtatctgtacttatattgaatggtttgactgtaaaattcttctt
ttctctatatcaaatagtcccACGAGGAAtgtgtgtgtgtgtgtgtgtgtgtgtgt
gtgtgtgtgtgtATTTTAAATGAGAACCAAGCAAAAGCTTATGGTAGAGACCAGGCT

>AF188029-1, chr8, pos 12517357 in NCBI build 33
Primer pair:
F: TCCTTGCAAATGTCTCTTTCTTC
R: ATGGGAAGGAATTTGGGACT
length: 171
Amplimer:
TCCTTGCAAATGTCTCTTTCTTCCCCCTGGTACCATACCCCTGTATCTCTTAAGACAa
cacacacacacacacacacacacacacacacacacaTTCTCTCCCTCTCTCACTCCCTACTT
TTTTCCTTCCCACTGAGAGATTCAAACCTTCAAAAAGTCCCAAATTCCTTCCCAT

>AF188029-7, chr8, pos 12558445 in NCBI build 33
Primer pair:
F: CACCATTCTGTCGGCTGTAA
R: AAAGGGCTTGGTAACTCCTC
length: 180
Amplimer:
caccattctgtcggctgtaaaagcacggcaccagcatctgctcggcttcttgtgaggc
ctcaggaagcttttactcatggttgaaggtgaatgcagagcaggtatatcacatggtg

agaggggagtgagagagagagagagagagagagagagaggaggagttaccaag
cccttt

>AF188029-10, chr8, pos 12572944 in NCBI build 33
Primer pair: F: CACGACCACACCAGCCTAAT R:
AAAGGCAGGCAGGCACAG length:
195Amplimer:cacgaccacaccagcctaattttgtgtgtacgtgtgtgtgtgtgtg
tgtgtgtgtgtgtgtgtgttttggtagaggcagagtttcactatgttgcccaggctgg
tcttgaactcctgggctcaagtgatctgccccacctcggcctcccgaagtgctgggat
tacaggtgtgagcctctgtgcctgcctgccttt

>AF188029-12, chr8, pos 12583159 in NCBI build 33
Primer pair:
F: GAATGGAAGCAAGGATGAGC
R: GACGCTGGTCTATTTCAGGTG
length: 304
Amplimer:
GAATGGAAGCAAGGATGAGCTGCTGCATTTCTGTAGCTGGCATTCAGCTCAAGAATAC
GTAAAACCAGACTCGTGGttttttctttctttctttctttctttctttTTGAATGTGA
GGCCTTTACAGAAAAAGAAAATGTCAGTCTGATTATCCAGGGCATGAGGATAAAGAGA
AGCCCAAACAAAGGTTTCCCCCACTCCACCCCACCCAATATACTGTGGCACTAGAAAA
CGATTCCAGAATCAGAAACTATATGCTGACGTCCATTAGCCCTCTTAGTAGCACCTGA
AATAGACCAGCGTC

>DG8S301, chr8, pos 12612075 in NCBI build 33
Primer pair:
F: CAATCAAGCCTGTGTCGAGT
R: AGGAAGGCATTTGAATGAGC
length: 169
Amplimer:
CAATCAAGCCTGTGTCGAGTTAAGAATTAAATGggaggttgcagtgagccaatatcat
gccactgcactccaggctgggcgacaggataagactccatctcaaaataaaaaaaata
aaaaaataaaGGTTTGTATTTCTTTTTTCTTAAGCTCATTCAAATGCCTTCCT

>DG8S308, chr8, pos 12617557 in NCBI build 33
Primer pair:
F: GGATGGCCTTTGGTAACTGA
R: GGAAATGAACATGATAACATCTGG
length: 175
Amplimer:
GGATGGCCTTTGGTAACTGATCTCATGACCAATATTAAGCTGTGAGCTCTCTTTTCCG
AATTTTTACATTATCCTCTTACAACCACCTCCCTCAacacacacacacacacacacac
acacacacacacacactCTCTCTCACACTCCCCACCCAGATGTTATCATGTTCATTTC
C

>DG8S188, chr8, pos 12654843 in NCBI build 33
Primer pair:
F: CCATTTACGCTTTGGTCTGC
R: CCCTTTGTCAAGTGCTTTCA
length: 102
Amplimer:
CCATTTACGCTTTGGTCTGCAGAGACTATTAATTATTTGGTTGTTTTTGTTTTCATGT
TTGAATAAGCACAGATTCTGGCATTGAAAGCACTTGACAAAGGG

>DG8S245, chr8, pos 12665541 in NCBI build 33
Primer pair:
F: TTCCGAGGTAAGCCTTTGTG
R: ACCCTCTTTCAGAGCCAGGT
length: 307
Amplimer:
TTCCGAGGTAAGCCTTTGTGGCCCCTGACCCTAATACAGAAGAGACACTAATTTATTT
TCCTGCTCTGTGGTCCCAGAGTTATGTGAATTTCCTTTTGAAATTCATCATGCAtatt
tatttatttatttatttatttatttatttaAGCATATttctctatcagagtatacctg
tcaccatggcagggatttgtctgcctctttctctttcactgaagtacccacagtaccc
ggcatagtgctggcgctgttcagggtgcccggtaaacttgtgtgaatgaatTTTTACC
TGGCTCTGAAAGAGGGT

>DG8S192, chr8, pos 12759031 in NCBI build 33
Primer pair:
F: AATCGCTGCTACAGGGACAC
R: AACTGCATAAATATTTGACGTGGA
length: 113
Amplimer:
AATCGCTGCTACAGGGACACACATATCTCTCTATCcatacacacacacacacacacac
acacacacacacGTGTACGTATTTCTAGTATTCCACGTCAAATATTTATGCAGTT

While this invention has been particularly shown and described with references to preferred embodiments thereof, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the scope of the invention encompassed by the appended claims.

HAMILTON, BROOK, SMITH & REYNOLDS, P.C.

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 C.F.R. 1.53(c)

Express Mail Label Number EV 214945978 US Docket Number 2345.2058-000

INVENTOR(S)		
Given Name (first and middle (if any))	Family Name or Surname	Residence (Street Address, city and either state or Foreign Country)
Sóley	Björnsdóttir	Fannafold 137 112 Grafarvogur Iceland

[X] Additional inventors are being named on the separately numbered sheet(s) attached hereto

TITLE OF THE INVENTION (280 characters max)

Inversion on Chromosome 8p23 is Risk Factor for Anxiety Disorders, Depression and Bipolar Disorders

CORRESPONDENCE ADDRESS

Direct all correspondence to:

NAME	**Customer No. 021005**				
	HAMILTON, BROOK, SMITH & REYNOLDS, P.C.				
ADDRESS	**530 Virginia Road, P.O. Box 9133**				
CITY	**Concord**	STATE	**MA**	ZIP CODE	**01742-9133**
COUNTRY	**USA**	TELEPHONE	**(978) 341-0036**	FAX	**(978) 341-0136**

ENCLOSED APPLICATION PARTS *(check all that apply)*

[X] Specification *Number of Pages* [110] [ ] Other (specify) _____

[X] Drawing(s) *Number of Sheets* [88]

METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one)

[X]	A check or money order is enclosed to cover the filing fees. Please charge any deficiency in fees and credit any overpayment to Deposit Account Number **08-0380**.	**FILING FEE AMOUNT ($)**
[ ]	The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number **08-0380**.	**$160**

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.

[X] No

[ ] Yes, the name of the U.S. Government agency and the Government contract number are: _____

Signature	Alice O. Carroll	Date	September 19, 2003
Submitted by Typed or Printed Name	Alice O. Carroll	Reg. Number	33,542

PROVISIONAL APPLICATION COVER SHEET

Additional Page

Docket Number	2345.2058-000

INVENTORS		
Given Name (first and middle (if any))	Family Name or Surname	Residence (Street Address, city and either state or Foreign Country)
Augustine	Kong	Marargötu 2 101 Reykjavík Iceland
Thorgeir E.	Thorgeirsson	Bauganes 35 107 Reykjavík Iceland

@PFDesktop\::ODMA/MHODMA/Manage;421195;1

Number 2 of 2

Document made available under the Patent Cooperation Treaty (PCT)

International application number: PCT/US04/030699

International filing date: 17 September 2004 (17.09.2004)

Document type: Certified copy of priority document

Document details: Country/Office: US
Number: 60/504,307
Filing date: 19 September 2003 (19.09.2003)

Date of receipt at the International Bureau: 21 February 2005 (21.02.2005)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)

World Intellectual Property Organization (WIPO) - Geneva, Switzerland
Organisation Mondiale de la Propriété Intellectuelle (OMPI) - Genève, Suisse